SunStar

USER'S MANUAL

KM-757

High speed, two needle, drop feed, needle feed, sewing machine with automatic thread trimmer.

KM-797

High speed, two needle, drop feed, needle feed, sewing machine with automatic thread trimmer for each needle.

1) FOR AT MOST USE WITH EASINESS, PLEASE CERTAINLY READ THIS MANUAL BEFORE STARTING USE.
2) KEEP THIS MANUAL IN SAFE PLACE FOR REFERENCE WHEN THE MACHINE BREAKS DOWN.

SunStar CO., LTD.

MME-090929

1. Thank you for purchasing our product. Based on the rich expertise and experience accumulated in industrial sewing machine production, SUNSTAR will manufacture industrial sewing machines, which deliver more diverse functions, high performance, powerful operation, enhanced durability, and more sophisticated design to meet a number of user's needs.
2. Please read this user's manual thoroughly before using the machine. Make sure to properly use the machine to enjoy its full performance.
3. The specifications of the machine are subject to change, aimed to enhance product performance, without prior notice.
4. This product is designed, manufactured, and sold as an industrial sewing machine. It should not be used for other than industrial purpose.

SunStar CO., LTD.

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Safety Rules for Machines

Safety labels in the manual are categorized into danger, warning and caution.
Failure to follow the safety rules may result in physical injuries or mechanical damages.
The safety labels and symbols are defined as follows.

[The meaning of the safety labels]

Danger
Instructions here shall be observed strictly. Otherwise, the user will be killed or suffer severe physical injuries.

Warning
Instructions here must be observed, or the user could suffer fatal or severe physical injuries.

Caution
Instructions here should be observed, or the user could face physical injuries or mechanical damages.

[The meaning of symbols]

	This symbol means a must-not.
	This symbol means a must for safety.
	This symbol means that an electric shock may be caused if the instruction is not followed properly.

1-1) Machine mobilization Danger	Only personnel with a full understanding of the safety rules should move the machines. The following directions must be observed when delivering the machines. ⓐ At least two persons should work together. ⓑ In case the machine should be transported, please wipe the oil covered on the machine to prevent accidents.
1-2) Machine Installation Caution	Because physical damage such as the functional obstacles and breakdowns are likely to occur according to the environment in which the machine is being installed. Therefore, the following preconditions should be fulfilled. ⓐ Please keep the order from top to bottom when unpacking the package. Especially, mind that the nail on the boxes. ⓑ Because machines are apt to be contaminated and corroded by dust and moisture, you should install the climate controller and should clean the machines regularly. ⓒ Keep the machines out of the direct rays of the sun. ⓓ Keep both sides and the backside of the machines off at least 50cm from the wall to secure enough space to repair. ⓔ Danger of Explosion Don' t run the machine near the places with the dangers of explosion. Don' t run the machine near the places with the dangers of explosion, including the places where the spraying product like aerosol are used in large quantities or oxygen are dealt with, unless the exact actions concerning the operation are guaranteed to avoid the explosion. ⓕ Because of the peculiarity of the machine, any illuminators are not equipped. So, users should install the lighting apparatus around the working area. [Note] The details about the installment of the machine are described in No. 2 Installations.
1-3) Troubleshooting Danger	In need of troubleshooting, it should be done by the trained A/S engineer of our company. ⓐ Ahead of cleaning and repair, be sure to shut off the power supply. And wait for about 4 minutes till the machine discharges completely. ⓑ Even a part or all of the machine should not be modified without any consultation with our company ⓒ In case of repair, you should change the damaged part into the standard article of our company ⓓ After repair, please put again the safety cover disjointed while repairing

1-4) Machine Operation

Warning

KM-757/797 series are manufactured for industry use to sew textiles and other similar material. In case of running the machine, users should observe the following things.

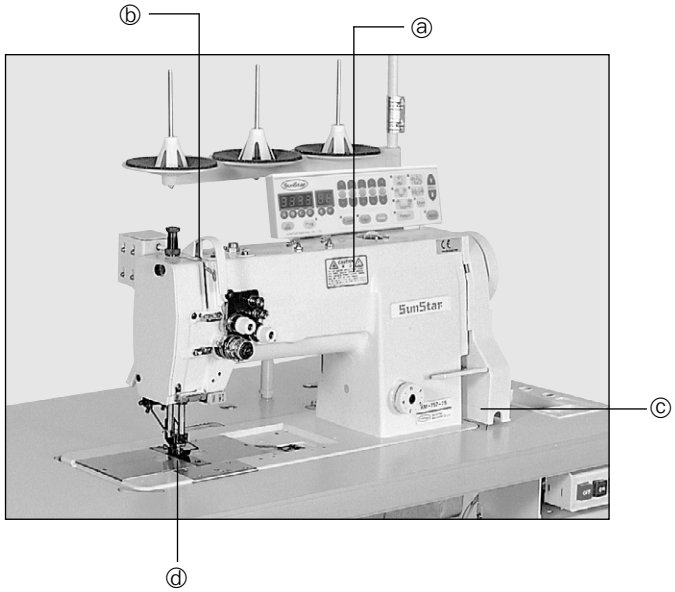
ⓐ Ahead of operating the machine, please read the manual and understand fully the details on its operation.
ⓑ Don't forget to put on the garment suited for the safe work.
ⓒ Keep your hands or a part of the body away from the running part of the machine like a needle, hook, thread take-up spring and pulley etc.
ⓓ Don't remove any kind of cover for safety while running the machine.
ⓔ Be sure to connect the earthed line.
ⓕ Before opening the electric box such as a control box, be sure to shut off the power supply and make sure that the power switch should be put on "off."
ⓖ When threading the needle or before checking after sewing, be sure to stop the machine.
ⓗ Don't switch on the power supply with the foot on the pedal.
ⓘ Don't run the machine when the cooling fan are not running. Be sure to clean the air filter in the control box once a week.
ⓙ If possible, keep off from the strong electronic wave like a high frequency welding machine

Warning	Always start the machine with safety covers in place since fingers or hands could be injured or cut off by the belt. Turn off the power switch during check-ups or adjustments.

1-5) Safety Device

Warning

ⓐ Safety Label: Suggestions while running the machine are stated.
ⓑ Thread take-up spring cover: the device to prevent the human body from touching the thread take-up spring.
ⓒ Belt cover: the device to prevent hands, feet and clothing from getting jammed by the belt
ⓓ Finger guard: the device to prevent fingers from contacting the needle.



1-6) Position of Caution Mark

CAUTION
경 고

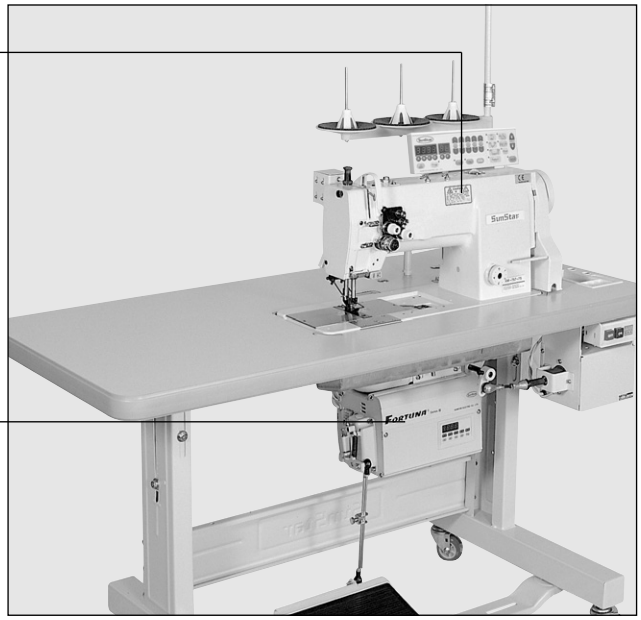
Do not operate without finger guard and safety devices. Before threading, changing bobbin and needle, cleaning etc. switch off main switch.
손가락 보호대와 안전장치 없이 작동하지 마십시오.
실, 보빈, 바늘교환시나 청소전에는 반드시 주전원의 스위치를 꺼 주십시오.

CAUTION
경 고

Hazardous voltage will cause injury.
Be sure to wait at least 360 seconds before opening this cover after turn off main switch and unplug a power cord.
고압 전류에 의해 감전될 수 있으므로 커버를 열 때는 전원을 내리고 전원 플러그를 뽑고 나서 360초간 기다린 후 여십시오.

"Caution" is attached to the machine for safety.
In case of starting to run the machine, read the directions of "Cautions" carefully.

[Position of Caution Mark]



1-7) Content of "Caution"

Caution

CAUTION
경 고

Do not operate without finger guard and safety devices. Before threading, changing bobbin and needle, cleaning etc. switch off main switch.
손가락 보호대와 안전장치 없이 작동하지 마십시오.
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CAUTION
경 고

Hazardous voltage will cause injury.
Be sure to wait at least 360 seconds before opening this cover after turn off main switch and unplug a power cord.
고압 전류에 의해 감전될 수 있으므로 커버를 열 때는 전원을 내리고 전원 플러그를 뽑고 나서 360초간 기다린 후 여십시오.

1 Specification

1) Sewing machine

No	Model No	Model Name
1	KM-757	High-speed, two needle, drop feed, needle feed, standard hook sewing machine
2	KM-757-7S	High-speed, two needle, drop feed, needle feed, standard hook sewing machine with automatic thread trimmer (Servo motor)
3	KM-757BL	High-speed, two needle, drop feed, needle feed, double hook sewing machine
4	KM-757BL-7S	High-speed, two needle, drop feed, needle feed, double hook sewing machine with automatic thread trimmer (Servo motor)
5	KM-797	High-speed, two needle each, drop feed, needle feed, standard hook sewing machine
6	KM-797-7S	High-speed, two needle each, drop feed, needle feed, standard hook sewing machine with automatic thread trimmer (Servo motor)
7	KM-797BL	High-speed, two needle each, drop feed, needle feed, double hook sewing machine
8	KM-797BL-7S	High-speed, two needle each, drop feed, needle feed, double hook sewing machine with automatic thread trimmer (Servo motor)

Item \ Model Name		KM-757	KM-757-7S	KM-757BL	KM-757BL-7S
Usage		General to heavy material			
Max sewing speed		3,000 SPM			
Max no. of stitches		5 mm		7 mm	
Needle bar stroke		33.4 mm			
Feed dog height		1 mm			
Presser foot height	Manual	7 mm			
	Knee	15 mm			
	Automatic		10 mm		10 mm
Needle		DP×5 # 14 (#11 ~ #22)		DP×5 #22 (#11 ~ #22)	
Lubrication		Automatic lubrication			
Needle width gauge		1.6mm ~ 52.4mm	16mm ~ 50.8 mm	1.6mm ~ 38mm	

Item \ Model Name		KM-797	KM-797-7S	KM-797BL	KM-797BL-7S
Usage		General to heavy material			
Max sewing speed		3,000 SPM			
Max no. of stitches		5 mm		7 mm	
Needle bar stroke		33.4 mm			
Feed dog height		1 mm			
Presser foot height	Manual	7 mm			
	Knee	15 mm			
	Automatic		13 mm		13 mm
Needle		DP×5 # 14 (#11 ~ #22)		DP×5 #22 (#11 ~ #22)	
Lubrication		Automatic lubrication			
Needle width gauge		2.4mm ~ 15.9mm			

2) Servo motor

MODEL	VOLT	WATT	HERTZ
SC55-1B	1 phase 110V	550W	50/60 Hz
SC55-2B	1 phase 220V	550W	50/60 Hz
SC55-3B	3 phase 220V	550W	50/60 Hz

3) Clutch motor (for non-trimming type)

MODEL	VOLT	WATT	HERTZ
HEC-1701	1 phase 220V	250W	50/60 Hz
HEC-1703	3 phase 220V/380V	250W	50/60 Hz
HEC-1705	3 phase 220V	400W	50/60 Hz
HEC-1706	1 phase 220V	400W	50/60 Hz

4) Peripheral automation devices (optional)

(S□: Servo motor E□: 470 motor)

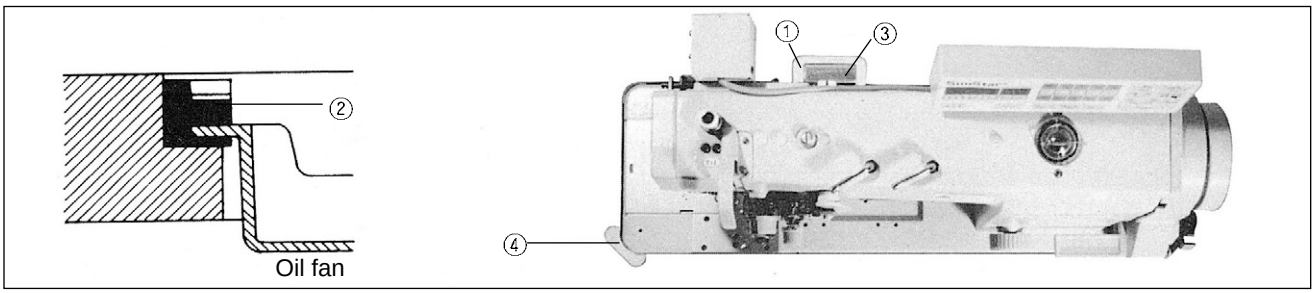
Optional device	Model	Usage
AUTO KNEE LIFTING SYSTEM	SPF-4	A solenoid operating structure where the presser foot gets lifted automatically with pedal reverse gear stage 1 operation.
PRODUCTION COUNTER	SCOUN-1	A counting device which indicates the completed quantity on the program unit panel, including added, subtracted, corrected or remaining quantity along with other performance rates.
MATERIAL EDGE SENSOR	SEDG-1 SEDG-2	A device that senses the edge or thickness of the sewing material to stop the machine without manual pedaling. Available in two types: SEDG-1 for edge sensing type and SEDG-2 for thickness sensing type.

2 Installation

Caution	
	▶ Installation of the machine should be performed by a trained engineer.
	▶ Any electrical wiring must be performed by a qualified technician or agent.
	▶ The machine weighs over 42kg. At least 2 persons should carry out the installing work.
	▶ Plug in after the installation is complete. If the operator mistakenly steps down on the pedal with the pug in, the machine will start automatically and can cause physical injuries.
	▶ Connect the ground (earth) wire. An unstable connection may result in an electric shock or a malfunction.
	▶ Place the belt cover on top of the machine.
	▶ Use both hands when bending the machine backwards or returning it to the normal position. Using only one hand can lead to severe hand injuries due to the weight of the machine.

1) Installation of the machine head

Insert the hinge rubber ① into the table and fix the oil fan into the center of the machine head support rubber B ② as in Figure 1 and attach it to the table. After attaching the machine head hinge ③ to the bed, insert it into the hinge rubber ① and install the sewing machine on the machine head support rubber A ④ and machine head support head B ②.



[Figure 1]

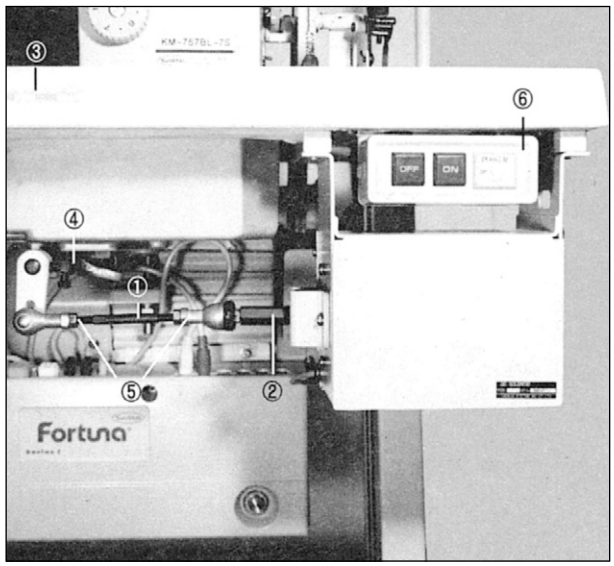
2) Installation of knee lifting solenoid and power switch box

(1) When attaching the power switch box ⑥, refer to Figure 2 to make sure that it is placed at the very center of the solenoid bracket.

(2) After attaching the solenoid onto the table, unfasten the screw ④ to adjust the center of middle linking bar ① and the center of solenoid shaft ② in parallel position with the lower side of the table ③. After the adjustment is over, fasten the screw tightly.
(See Figure 2.): An assembling position diagram can be found inside the solenoid box.

(3) The presser foot height of the sewing machine can be adjusted after unfastening the fixing nut ⑤ and then turning the middle linking bar ① clockwise to raise and counterclockwise to lower. After finishing the adjustment, tightly fasten the fixing nut ⑤.

(4) According to the installation position of knee-lifting solenoid, the operation noise, operation load and presser foot elevation range may differ. Please assemble so that the machine will operate smoothly.



[Figure 2]

⚠ Caution

- ▶ Plug in only after oil supply is finished. If the operator mistakenly steps on the pedal with the plug in, the machine will start automatically and can cause severe injuries.
- ▶ When handling lubricants, wear protective glasses or gloves to avoid contact with your eyes or skin. Inflammation may be caused otherwise. Never drink lubricants since they can cause vomiting or diarrhea. Keep out of the reach of children.

- ▶ Operate the machine only after adding oil when the machine is being used for the first time or has been left unused for a long time.

3) Oil supply

(1) Installing chip remover magnet

Attach the magnetic chip remover ① that is in the accessory box to the oil fan. (See Figure 3.)

※ Do not use the magnet for other purposes. Use of the sewing machine without the magnet may cause malfunction and has a bearing on the machine's durability.

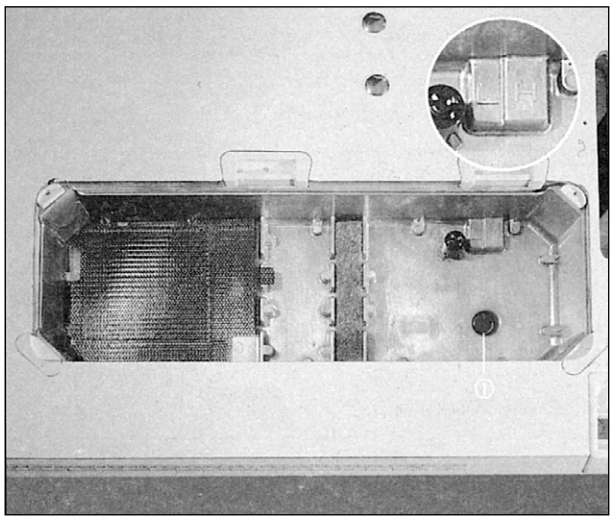
(2) Lubricating the oil fan

A. Fill the lubricant up to the "HIGH" mark. (See Figure 3.)

B. The lubricant must be SUNSTAR's oil provided exclusively for industrial sewing machines or SHELL's Tellus C10.

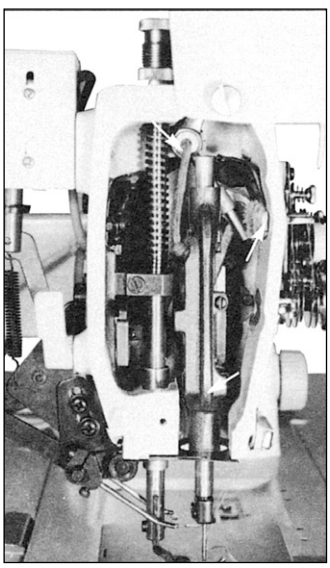
C. If the oil in use is down to the "LOW" mark, fill in to "HIGH" immediately.

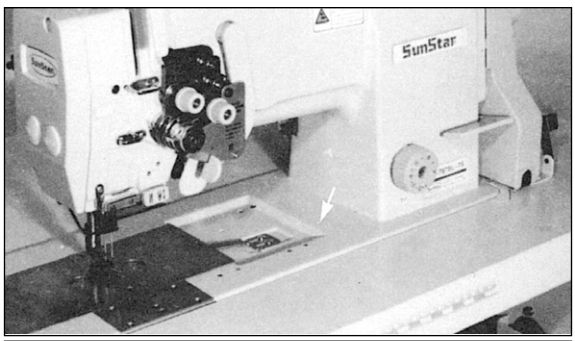
D. Once every two weeks is deemed the appropriate interval for oil refills.

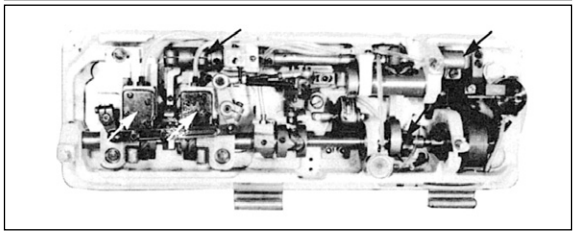


[Figure 3]

(3) For new machines that have been delivered a long ago or has not been used for a long period of time, open the face plate and apply the oil spray 2-3 times to friction areas such as the thread take up lever linkage ①, the needle bar ② and the presser bar ③. (See Figure 4.)



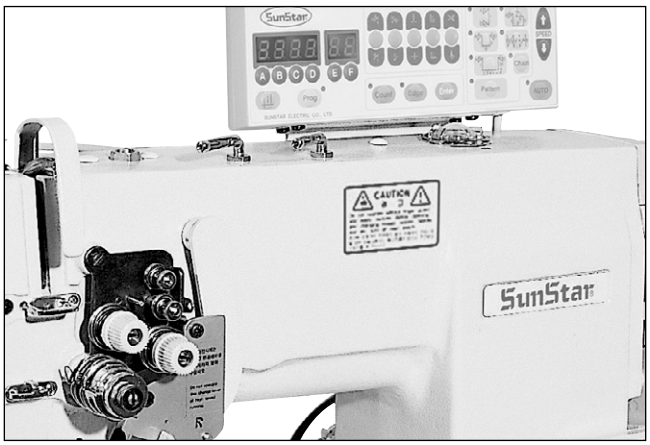




[Figure 4]

(4) For trial runs, operate the machine at 1,500 spm for about 10 minutes at a time. Be sure to check whether the oil window is being lubricated. (See Figure 5.)

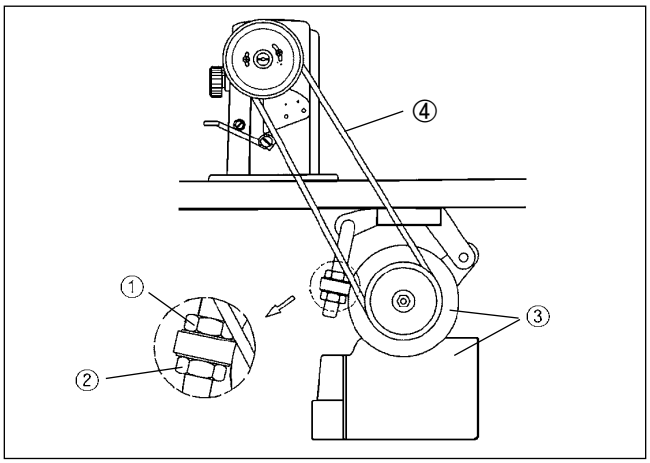
(5) Operate the machine at below 2,400 spm for the first 4-5 days and run the machine at normal speed thereafter to maintain the sewing machine in optimal condition.



[Figure 5]

4) Adjustment of belt tension

After installing the motor, unfasten the fixing nuts ①, ② and tension will be created to the belt ④ due to motor ③ falling by gravity. Fasten the fixing nut ① first now and then fasten the fixing nut ② tightly. (See Figure 6.)

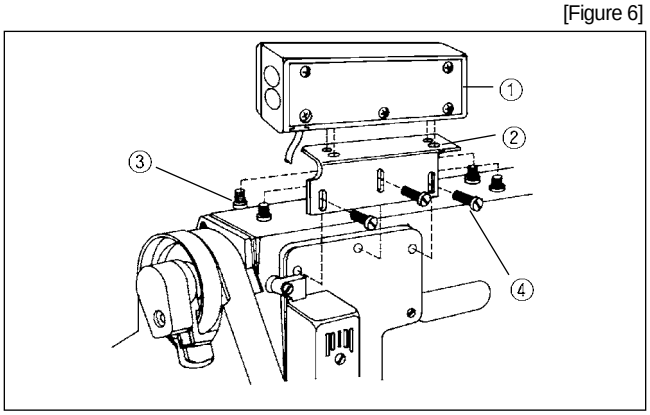


[Figure 6]

5) Installation of the program unit (Servo motor)

(1) Fix the bracket ② onto the program unit ①, using 4 fixing nuts ③.

(2) Then, use 3 fixing bolts ④ to tightly fix the bracket ②, where the program unit ① has been attached, along with the back cover. (See Figure 7.)

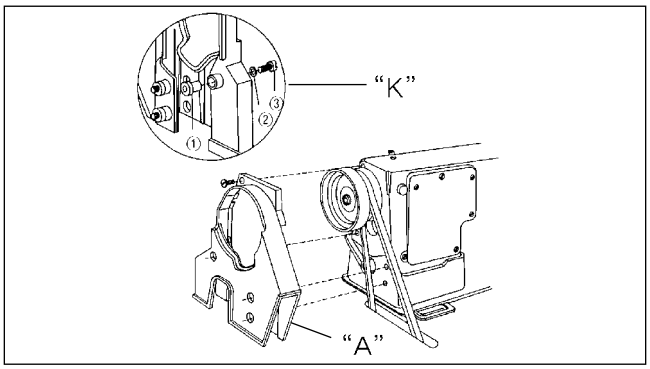


[Figure 7]

6) Installation of the belt cover

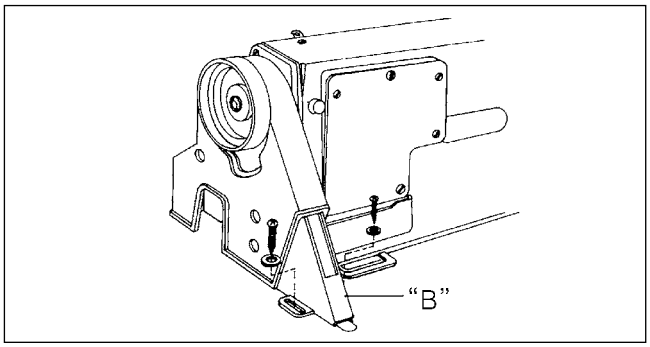
(1) Before attaching the belt cover "A" to the machine body, assemble in advance the rubber collar ① and washer ② and fixing nail ③ on the to-be-attached side of the cover as can be seen in picture "K" of Figure 8.

(2) Attach belt cover "A" onto the machine body as can be seen on Figure 8. Now, if a bobbin winder is attached on the table, lay down the machine body on its back and attach the belt cover "A".



[Figure 8]

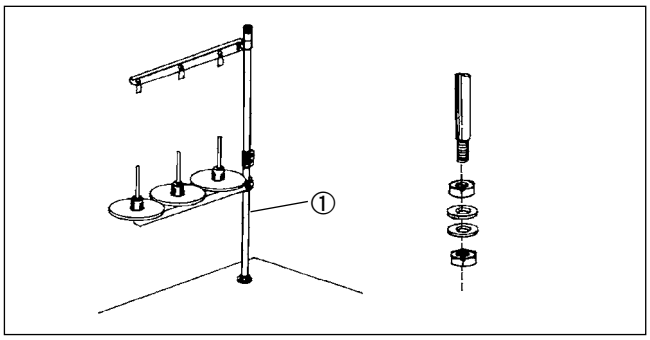
(3) Lastly, fasten the belt cover "B" to the table, as can be seen in Figure 9.



[Figure 9]

7) Installation of the thread stand

As can be seen in Figure 10, fix the thread stand ① to the table using the washer and nut on the right.



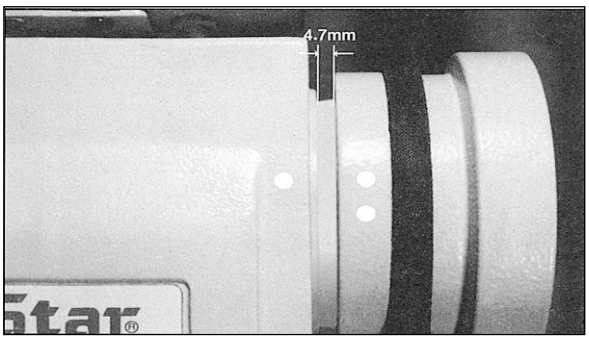
[Figure 10]

8) Assembly of the location detector and its control method

(1) Installation of the location detector

A. Installing on the servo motor (in-built location detector)

A location detector sensor is attached to the back side of the arm. The appropriate clearance between the location detector and the pulley is 4.7mm. (See Figure 11.)

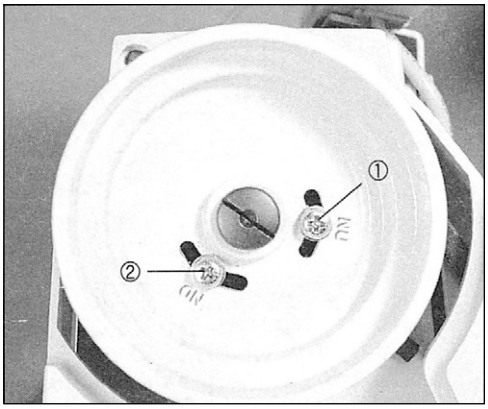


[Figure 11]

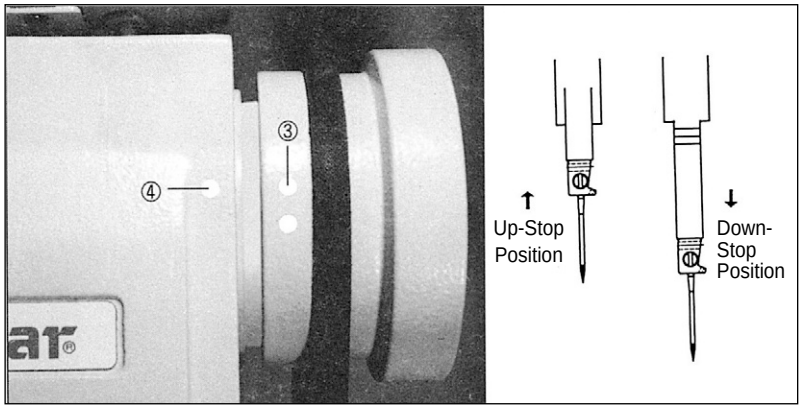
(2) Adjustment of the location detector

A. For Servo motor (in-built location detector)

Adjust the up-stop position of the needle such that the white carved sign on the pulley ③ is in a straight line with the carved sign on the arm ④ when the needle has stopped in the air. That adjustment can be made by loosening the pulley's clamp screw① on the side with N · U carved signs and moving it sideways. Adjust the down-stop position of the needle such that the needle is on the point of moving up when the needle bar is at the lowest point. This adjustment can be made by loosening the pulley's clamp screw ② on the side with N · D carved signs and moving it sideways. (See Figure 12 & 13.)



[Figure 12]

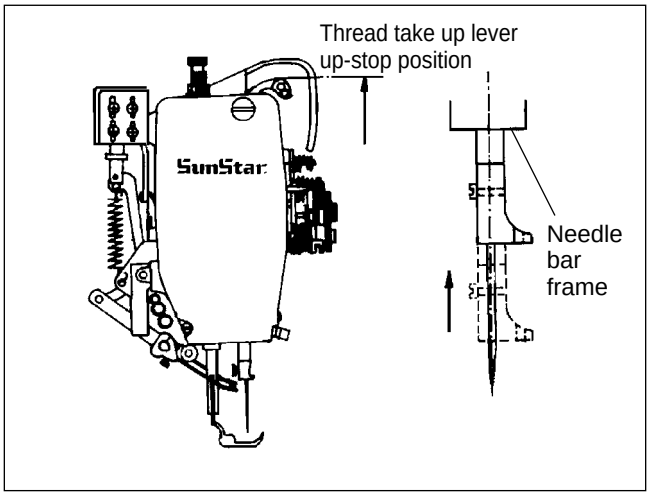


[Figure 13]

9) Check for the stop position of the sewing machine (automatic thread trimmer)

Check for the machine stop position after moving the needle up and down by pushing the reverse button. See whether the carved sign on the arm and the white carved sign on the pulley are aligned when the needle is in an up position. If not, adjustment to the photo film of the location detector or to the location of the magnetic holder will be necessary since there may be problems with the trimming. In other words, the needle's up-stop position should be identical with the stop position of the needle bar after the trimming operation, which would signify that there is nothing wrong with the operation timing of the trimmer. (See Fig. 14.)

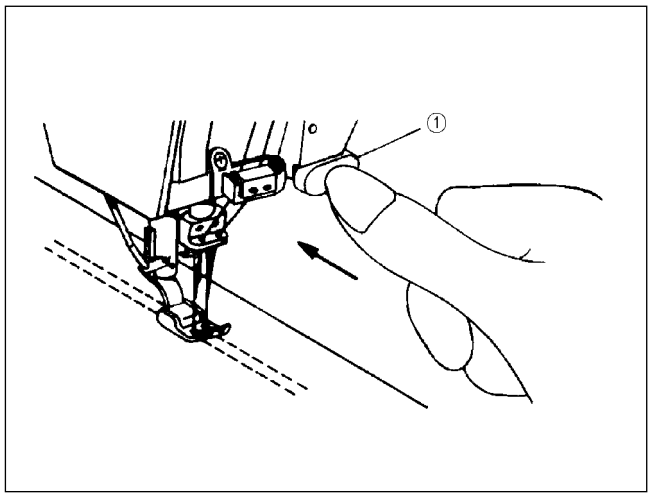
(Refer to the explanation about the Adjustment of Location Detector on page 13.)



[Figure 14]

10) Reverse button function (automatic thread trimmer)

Pressing the back tack button or reverse button ① during forward sewing will start reverse sewing immediately. When you stop the machine and restart it by stepping down on the pedal with the reverse button ① already pressed down, you can perform reverse sewing from the beginning. When the machine is in a "stop" mode, you can change the up-down position of the needle bar by pressing the reverse button. Lightly pressing the button once when the needle is in a down-stop position will stop the needle bar in a high position. Pressing the reverse button twice within less than a second when it is in an up-stop position will stop the needle bar in a low position. In short, the button delivers two functions: one for reverse sewing and the other for converting vertical position of the needle. (See Figure 15.)



[Figure 15]

MEMO

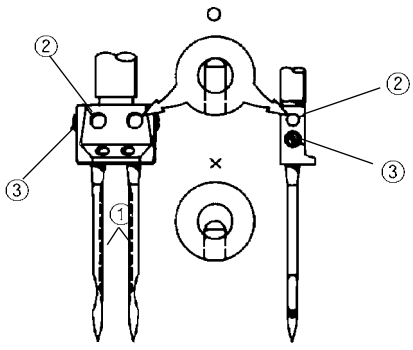
3 Adjustment of the Machine

Caution

- ▶ Always turn off the power when mounting a needle. If the operator mistakenly steps on the pedal while the power is on, the machine will start automatically and can result in physical injuries.
- ▶ When using clutch motor, be aware that the motor will continue to rotate for a while even after the power is switched off due to inertia. Start to work on the sewing machine only after the motor has come to a complete stop.

1) Inserting the needle

As in Figure 16, place the upper end of the needle closely adhered to the upper side of the stopper hole ②, with the needle groove ① facing inward. Fix the needle with a fixing screw③.



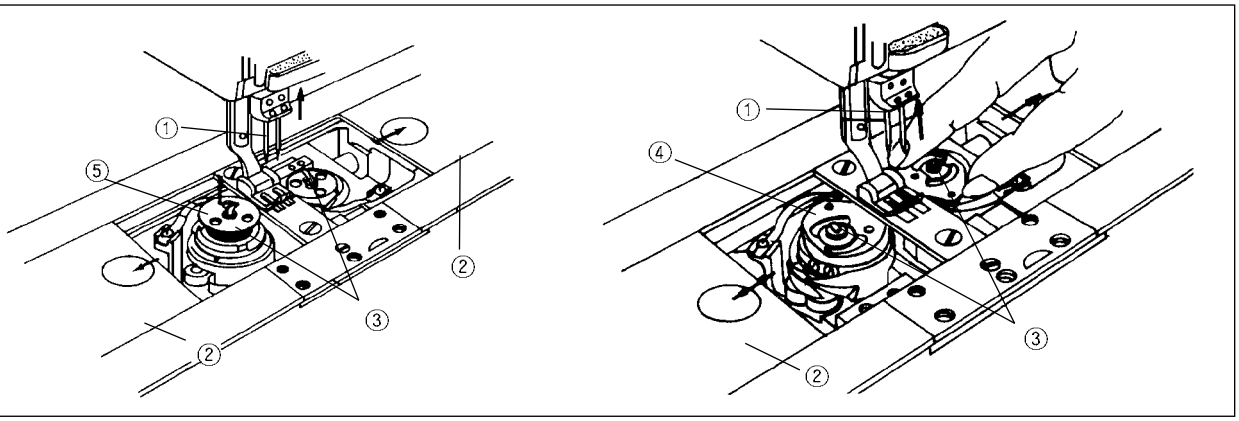
[Figure 16]

Caution

- ▶ Turn off the power when adjusting the lower thread tension. If the operator mistakenly steps down on the pedal while switched on, the machine will start automatically and can cause physical injuries.
- ▶ When using the clutch motor, be aware that the motor will continue to rotate for a while after the power is switched off. Start to work only after the motor has come to a complete stop.

2) Removing bobbin and bobbin case

Place the needle ① in the highest position, and then like in Figure 17, open the slide plates ② on the left and right, lift the bobbin holder ③ to remove the bobbin case ④ and the bobbin ⑤.



[Figure 17]

3) Winding the lower thread

(1) Winding the lower thread

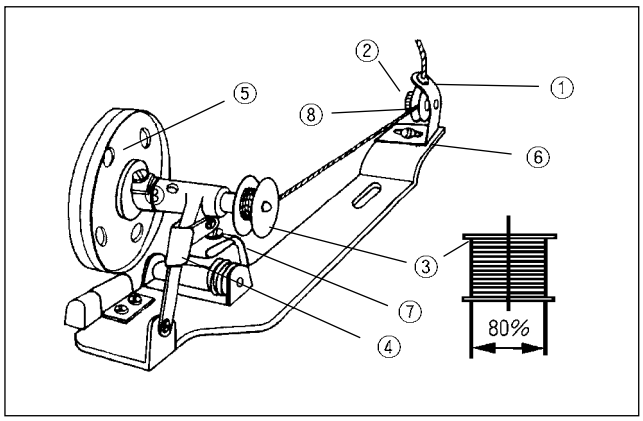
A. Push the thread through the hole ① and wind it from the back to the front of the tension adjusting plate ②.

B. Bring the thread toward the bobbin ③ and wind the thread around the bobbin about 5-6 times in the clockwise direction.

C. Push the lever ④ so that the pulley ⑤ will touch the V-belt, operate the machine.

D. Once the lower thread is wound around the bobbin, the pulley ⑤ automatically pulls apart from the V-belt.

E. About 80% of the bobbin should be wound with the lower thread. (See Figure 18.)



[Figure 18]

(2) Adjusting lower thread

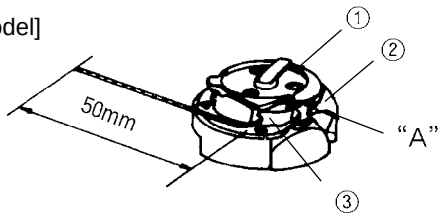
a. If the lower thread is not being wound evenly, loosen the screw ⑥ and adjust it by moving it left and right. Then, tighten the screw again.

b. The lower thread is wound more if the adjusting screw ⑦ is turned clockwise, and less if turned counterclockwise.

c. The tension of the lower thread being wound around the bobbin becomes tighter if the nut ⑧ is turned clockwise and looser if turned counterclockwise.

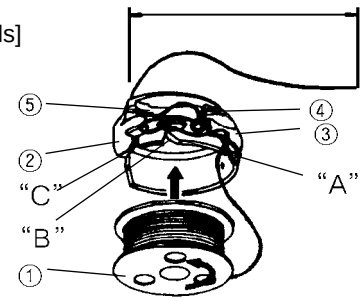
4) Routing the lower thread

[Applicable model]
- KM-757
- KM-757BL
- KM-757-7S



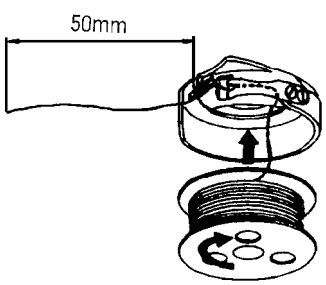
1. Insert the bobbin ① into the hook ②.
2. Insert the thread through "A" part of the hook ②, and pull it out from the end of the lower thread tension adjustment plate ③.
3. The adequate length of the pulled-out lower thread is 50mm.

[Applicable models]
- KM-797
- KM-797BL
- KM-797-7S

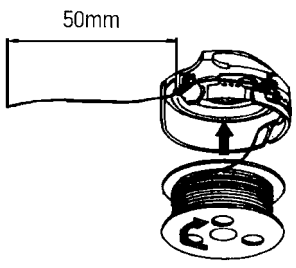


1. Insert the bobbin ① into the bobbin case ②. For KM -757-7S it is crucial to insert the bobbin in the turning direction as in the picture.
2. Insert the thread through "A" part of the hook ②, and pull it out from the end of the lower thread tension adjustment plate ③.
3. Pass the pulled-out thread through "B" and "C" of the bobbin case ②, as can be seen on the picture, and hang it onto the lower thread holding spring ④. Then pull it out through the thread hole ⑤.
4. The adequate length of the pulled-out lower thread is 50mm.

[Applicable models]
- KM-757BL-7S



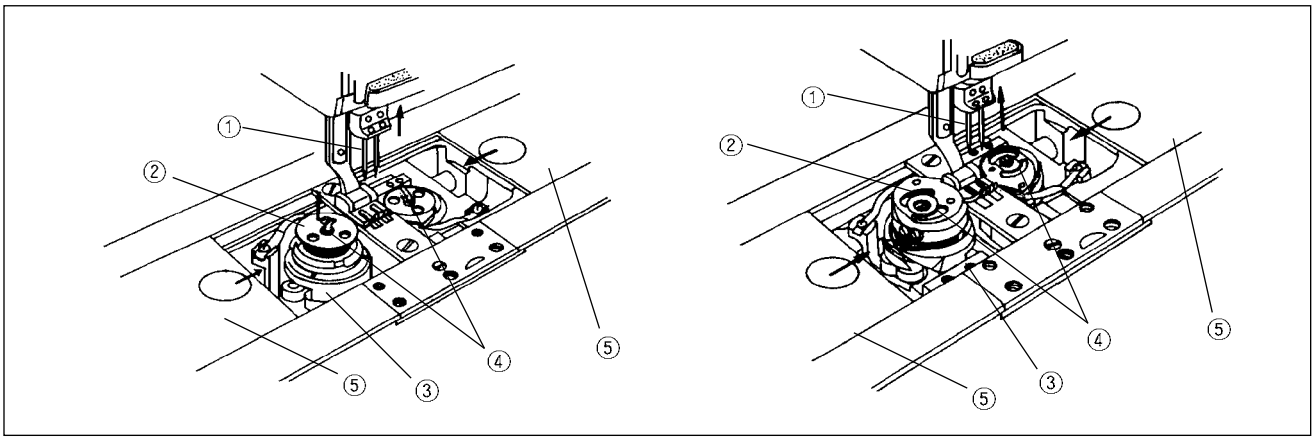
[Applicable models]
- KM-797BL-7S



[Figure 19]

5) Inserting the bobbin

Stop the needle ① at the highest position. Following the Figure 20, insert the bobbin (where the thread is rolled onto) or the bobbin case ② into the hook ③. After laying down the bobbin holder ④, close the slide plates ⑤ on the right and left.



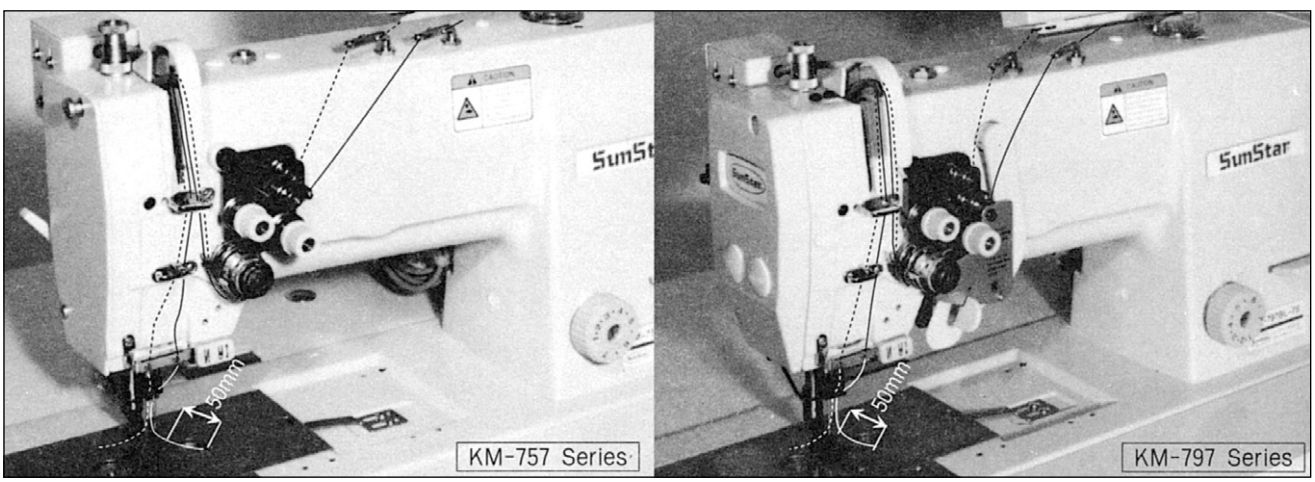
[Figure 20]

⚠ Caution

- ▶ Turn off the power switch when routing the upper thread. If the operator mistakenly presses down on the pedal while switched on, the machine will start automatically and can cause physical injuries.
- ▶ When using the clutch motor, be aware that the motor will continue to rotate for a while after the power is switched off. Start to work on the sewing machine only after the motor has come to a complete stop.

6) Routing the upper thread

Place the thread take-up lever to the highest position and hang the upper thread like in Figure 21. The adequate length of upper thread extending from the needle hole is 50mm for initial sewing.



[Figure 21]

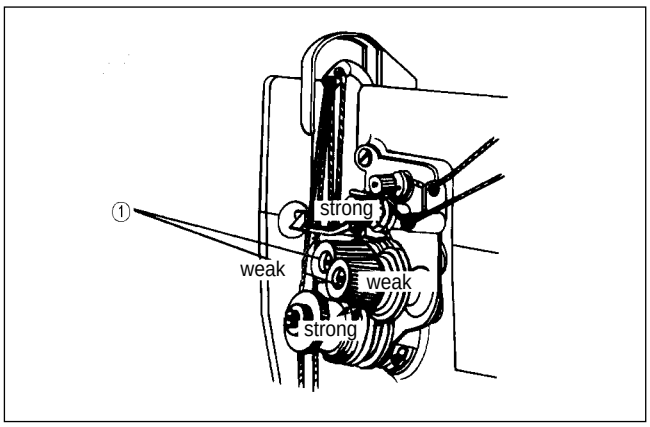
7) Adjusting the thread tension

The result of the needlework depends on the sewing conditions such as the sewing material, used thread and stitch length. So please adjust as desired.

○		good sewing
×		upper thread tension is strong while the lower thread tension is weak.
×		upper thread tension is weak while the lower thread tension is weak.

(1) Adjusting the upper thread tension

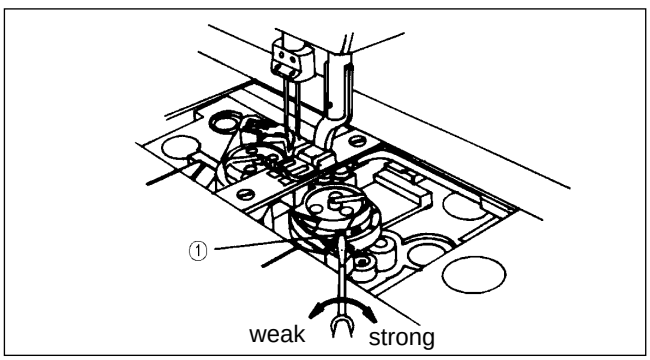
Like in figure 22, turning the tension adjustment nut of the thread tension control assembly clockwise makes the upper thread tension stronger and counterclockwise makes it weaker.



[Figure 22]

(2) Adjusting the lower thread tension

Like in figure 23, turning the tension adjustment nut ① of the hook clockwise makes the lower thread tension stronger and counterclockwise makes it weaker.



[Figure 23]

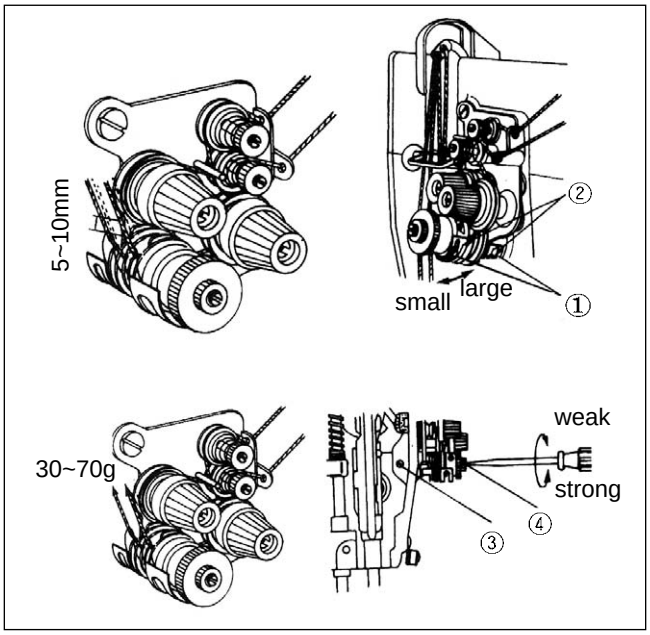
(3) Adjusting the tension of thread take up lever spring

A. Adjusting the thread take up stroke

As in figure 24, loosen the stopper fastening screw ①, and turn the thread take up lever' s spring stopper ② clockwise to make the stroke smaller and counter clockwise to make it bigger. The thread take up stroke is normally 5~10mm.

B. Adjusting the thread take up tension

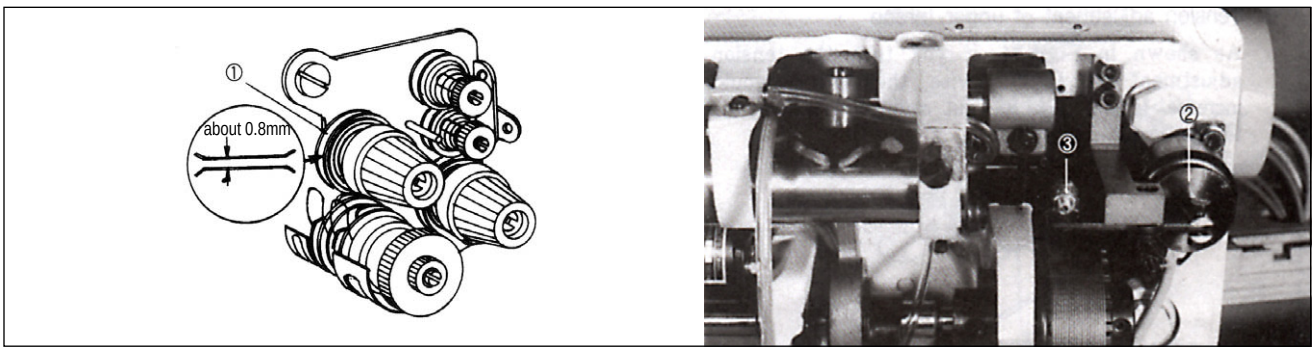
As in figure 24, loosen the screw ③ of the thread tension control assembly, and insert the driver into the groove ④ of the thread tension control assembly. Turn clockwise to make the spring tension stronger and counter clockwise to make it weaker. The thread take up spring tension is normally 30~70g.



[Figure 24]

(4) Adjusting the thread release stroke. (for automatic trimming type)

If the upper thread falls out from the needle hole after trimming, check whether the plate ① opens while the trimming is in action. For the adjustment of plate opening level, put the solenoid ② in action, and adjust by moving solenoid collar ③ back and forth to make the opening of the thread tension adjusting plate ① 0.8 mm. Also, when the thread release solenoid is not in action, check whether the plates are closely adhered to each other. (See Figure 25.)



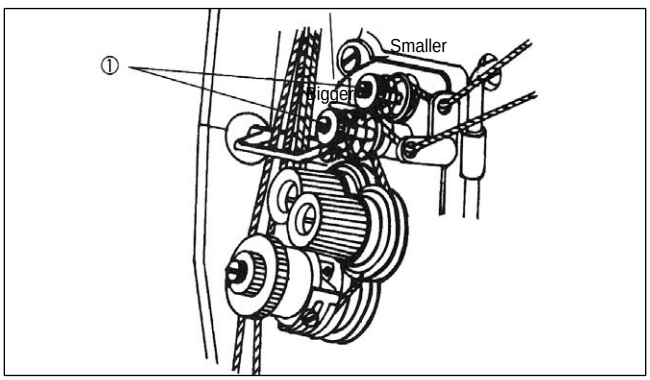
[Figure 25]

[Caution]

If the plates do not open enough during trimming action even when the assembling is correctly done, check whether or not the upper thread length adjustment volume, which is at the front of the control box, is low.

(5) Adjusting the auxiliary thread tension control assembly (automatic trimming type)

As in Figure 26, when the auxiliary thread tension adjustment nut ① is turned clockwise, the length of the thread after trimming is short. The other way makes the thread long. The appropriate length of the upper thread on the needle after trimming is 35~45mm. (This can also be done by using the remaining upper thread length adjustment volume of the control box.)



[Figure 26]

⚠ Caution

- ▶ After disassembling and adjusting a safety device, always place it back to the original position and check whether it functions as intended.
- ▶ Use both hands when pushing the machine backward or returning it to the original position. Due to the weight of the machine, your hand can get stuck in the machine if you should slip.
- ▶ When adjusting the machine with the switch on, be sure to pay extreme caution.

- ▶ Only trained engineers must perform troubleshooting or inspection of the machine.
- ▶ For electrical repair or inspection, consult with qualified technicians or agent.

8) Adjusting the height and pressure of the presser foot

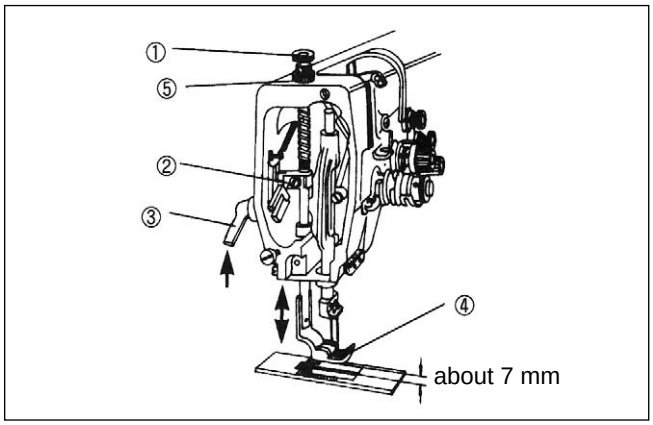
(1) Adjusting the height of the presser foot

Loosen the pressure adjustment screw ① and the presser bar bracket fastening screw ②, and lift the presser bar lifter ③. Make the distance between the upper side of the needle plate and the lower side of the presser foot ④ 7mm. Then, tightly fasten the bracket fastening screw ②. (See Figure 27.)

Be careful not to turn the presser bar.

(2) Adjusting the tension of the presser foot

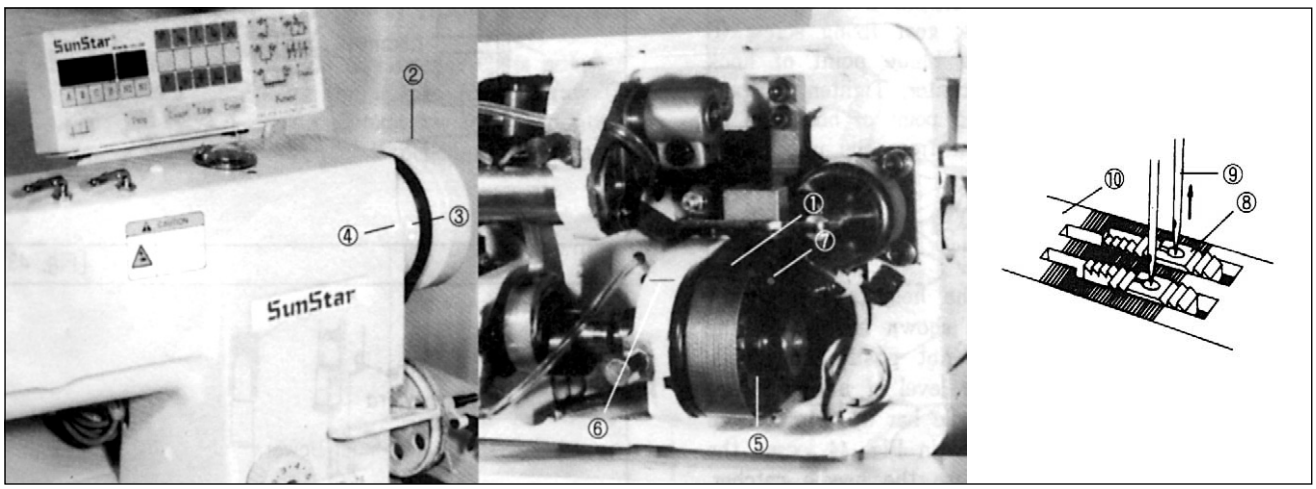
Turning the pressure adjustment screw ① to the right increases the presser foot tension, and turning it to the left makes it weaker. After adjusting, make sure to tighten the fixing nut ⑤. (See Figure 27.)



[Figure 27]

9) Adjusting the needle and feed dog timing

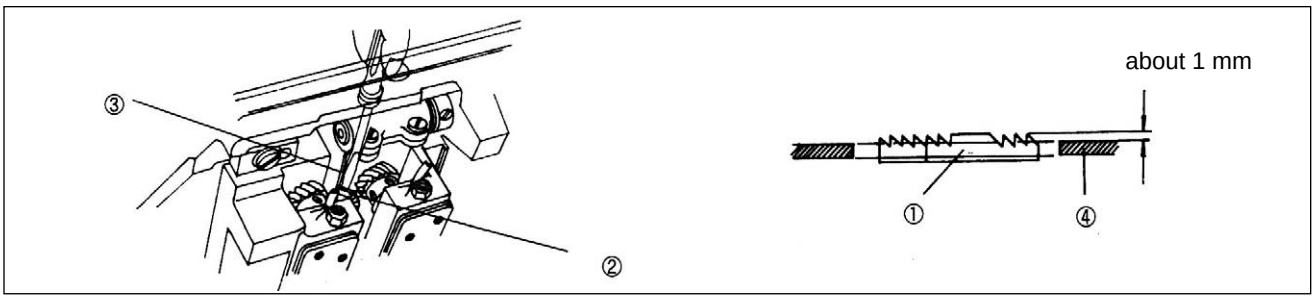
After removing the needle, lay down the machine on its back and remove the timing belt ①. Turn the pulley ② to align the highest position ③ of the pulley' s thread take up lever with the position ④. Then rotate the timing pulley ⑤ to align the bed base point ⑥ with the timing pulley' s base point ⑦. Hang the timing belt ① in this position. After adjustment, when the feed dog ⑧ comes down and the needle ⑨ goes up, check whether the needle tip ⑨ matches the needle plate upper side ⑩ at the moment that the feed dog upper side and the needle plate upper side ⑩ match each other. (See Figure 28.)



[Figure 28]

10) Adjusting the height of the feed dog

Turn the pulley to place the feed dog ① in the highest point. Loosen the feed dog base fastening screw ② and move the feed dog base ③ up and down to make the feed dog ① protrude in parallel from the needle plate upper side ④ by about 1 mm. (See Figure 29.)

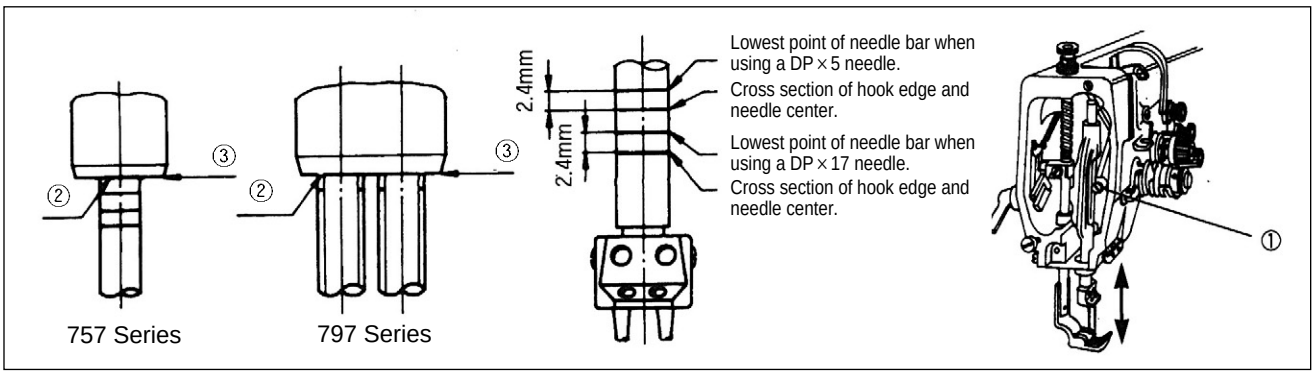


[Figure 29]

11) Adjusting the needle and hook timing

(1) Fixing the height of the needle bar

Turn the pulley to make the needle bar in the lowest position. Loosen the needle bar holding screw ①, adjust so that the needle bar carved sign ② meets the end of the frame ③ like in Figure 30, then tighten the screw.

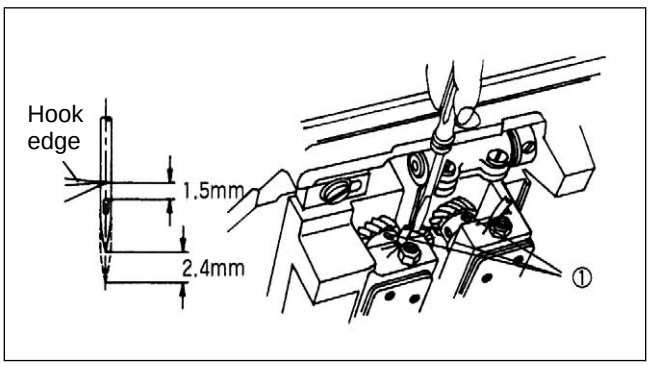


[Figure 30]

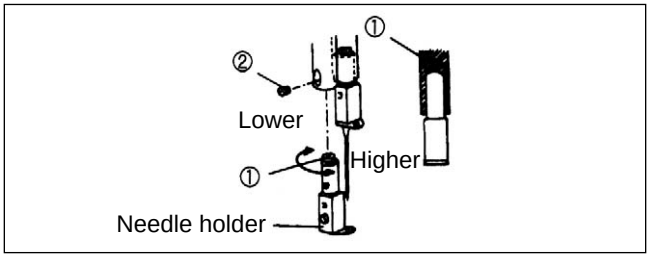
(2) Adjusting the timing of hook edge and needle center crossing

A. First, set the stitch length of (DIAL) KM-757, 757-7, 797, 797-7 types at 2.5mm and KM-757BL, 757BL-7, 797BL, 797BL-7 types at 3.5mm. Adjust the hook gear fastening screw ① so that like in Figure 31, the hook edge falls exactly at the center of the needle center when the needle bar is raised 2.4mm from its lowest position. When this is done, the hook edge will be placed at about 1~1.5 mm above from the upper shaft of the needle thread hole.

B. In case of the 797 series, if the height of the left and right needles are not the same, or if the Figure 31 situation-where the needle bar is raised 2.4 mm but the hook edge is not placed about 1~1.5 mm from the upper shaft of the needle thread hole-is not true, loosen the fixing screw ② of Figure 32, pull out the needle holder, and adjust the needle holder position fixing screw ① up and down to set the height of the needle.



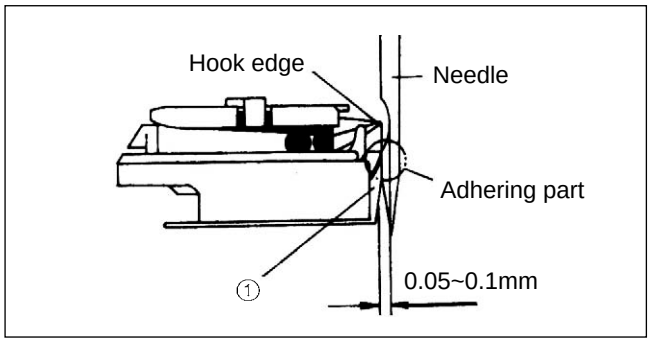
[Figure 31]



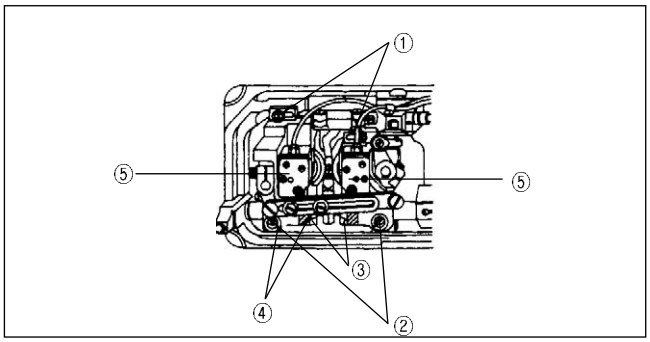
[Figure 32]

C. Adjusting the distance between the needle and the hook edge

Raise the needle from its lowest point so that the hook center meets the needle center. Like in Figure 33, when the lower shaft of the needle meets the balance point of the hook's needle guide plate ① (adjust the needle guide form), adjust the distance between the hook edge and the inner side of the needle groove to 0.05~0.1mm. Loosen ①②③④ of Figure 34 and move the left and right ⑤ of the hook base for adjustment.



[Figure 33]

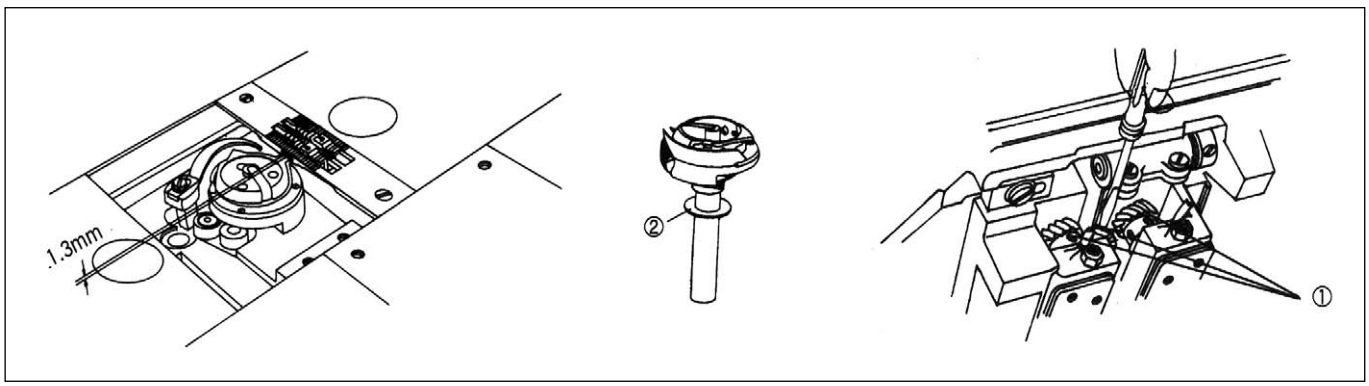


[Figure 34]

12) Clearance adjustment between the upper side of the hook stopper and the upper side of the needle plate groove

Like in Figure 35, the normal distance between the hook stopper and the upper side of the needle plate groove is 1.3mm. This distance is adjusted by the thickness of the space washer that lies under the hook. When the hook gear fixing screw ① is removed for repair or replacement, make sure to put back the space washer that was used originally.

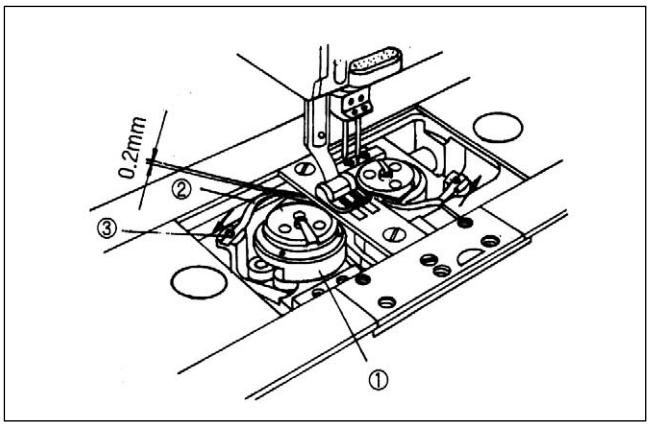
(The thickness of the washer may differ by machine.)



[Figure 35]

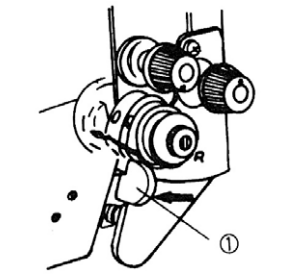
13) Clearance adjustment between the hook and opener

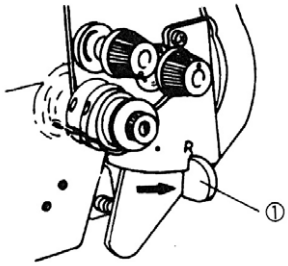
Loosen the opener fastening screw ③ and adjust the opener ② to the right and left so that the distance between the hook ① and the opener ② is 0.2mm when the opener ② is pulled to its max towards the arrowed direction. (See Figure 36.)

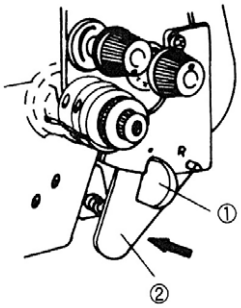


[Figure 36]

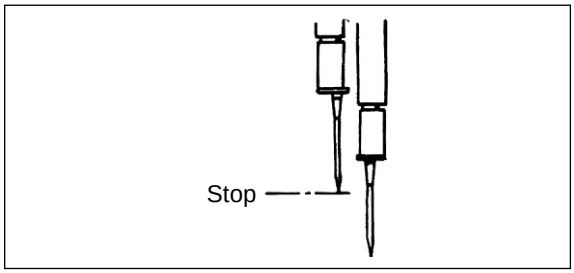
14) Operation of needle bar (left, right) stop (KM-797 Series)



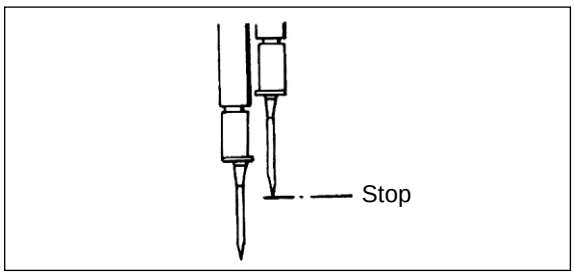




1. When stopping the left needle bar
   Place the needle bar trimming direction lever ① to the L (left) position.



2. When stopping the right needle bar
   Place the needle bar trimming direction lever ① to the R (right) position.



3. When switching to two needle sewing
   Vertically press the needle bar return pressing plate ②. The needle bar trimming direction lever ① will return automatically.

※ Do not sew at speeds of over 1,000 rpm while one of the needle bars been stopped.

※ The needle bar trimming direction lever ① can be used even during operation. However, don' t use this function when the needle bar is in the highest position. It works safely from the point when the needle bar is about 3 mm below the highest point.

[Figure 37]

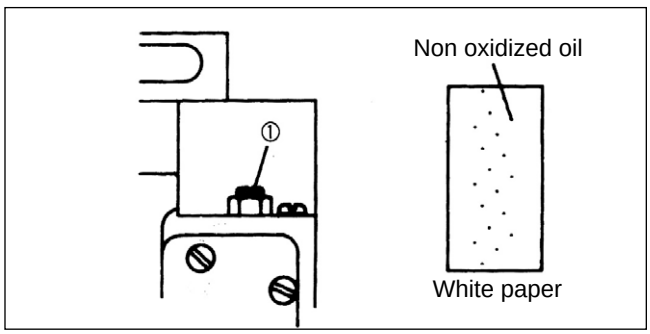
15) Adjusting oil flow in the hook and the face plate

(1) Hook oil level check

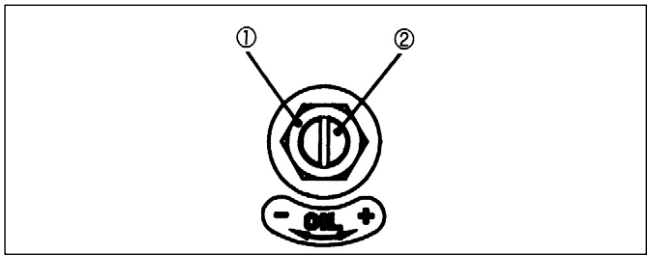
Check whether the amount of oil sprinkled from the hook for 10 seconds is as is on Figure 38. To adjust the amount of oil supply, turn the oil supply screw ① on the hook base to the right to decrease the oil supply, and to the left to increase the oil supply. (See Figure 38.)

(2) Face plate oil level check

If there is excessive or insufficient amount of oil provided to the face plate from the thread take up lever hinge pin, loosen the face plate oil level adjustment screw fixing nut ② and adjust the face plate oil level adjustment screw ①. After adjustment, tighten the fixing nut ②. (See Figure 39.)



[Figure 38]



[Figure 39]

16) Adjusting the trimming device

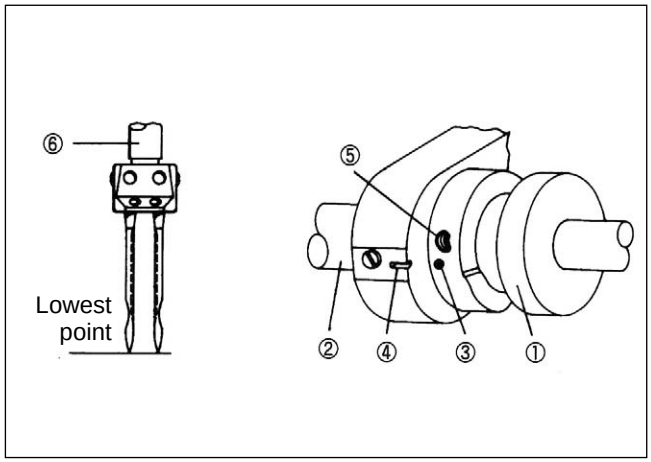
(1) Adjusting the trimmer driving part

A. Fixing the position of trimming cam
(See Figure 40.)

a) Turn the pulley with hand to place the needle bar ⑥ at its lowest position.

b) With the left side of the trimming cam ① softly attached to the right side of the lower shaft medium bushing ②, turn the cam to align the base point ③ with the carve④ in the lower shaft medium bushing crank.

c) Fasten tightly the trimming cam fixing screws (3) ⑤. Now, turn the pulley with hand to see whether or not the machine turns smoothly.



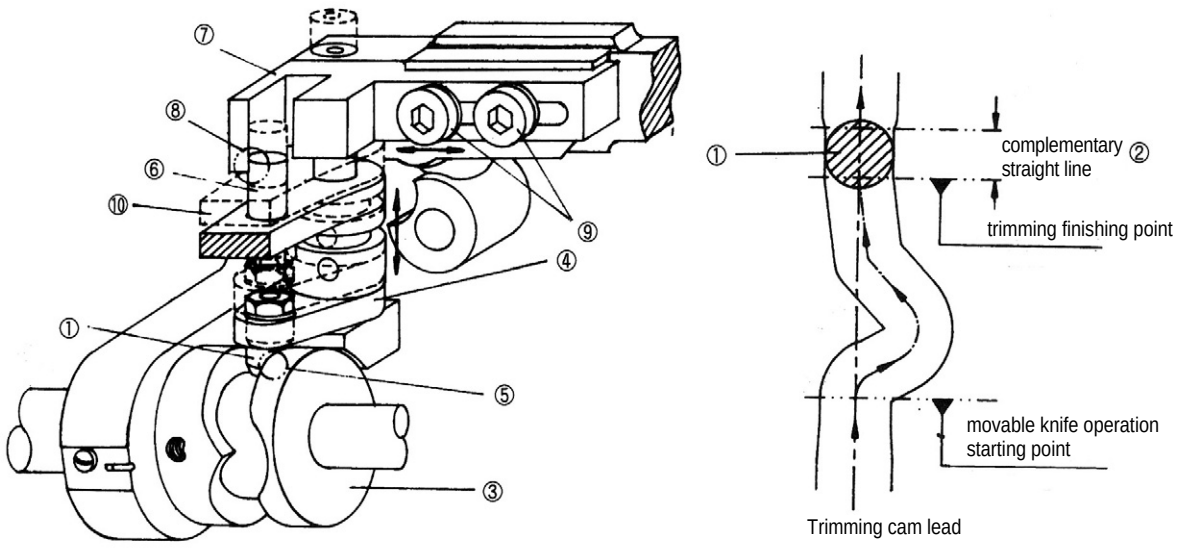
[Figure 40]

B. Adjusting the stopper pin holder (See Figure 41.)

a) Once the necessary trimming for trimming cam lead is finished, make sure to turn the machine pulley to place the trimming cam ③ in the right position, so that the roller ① can enter the complementary straight line range ②.

b) Press down the trimmer shake linkage ④ to make the roller ① come inside the trimming cam ③,

- Adjust the holder ⑦ to make the right equal point of the roller ① adhere smoothly to the right inside of the cam' s complementary straight line ②, and the left equal point of the stopper pin ⑥ adhere ⑧ smoothly to the left inside of the stopper pin holder ⑦. Once this is done, tightly fasten the fixing screw ⑨.
- Once such adjustments are made, the trimmer shake linkage ④ will not move even when shaken to its sides (the roller is inside the cam). Make sure to check if the shake linkage ④ returns to its original position ⑩ quickly and smoothly when released. If not, proceed with horizontal adjustment of stopper pin holder ⑦.



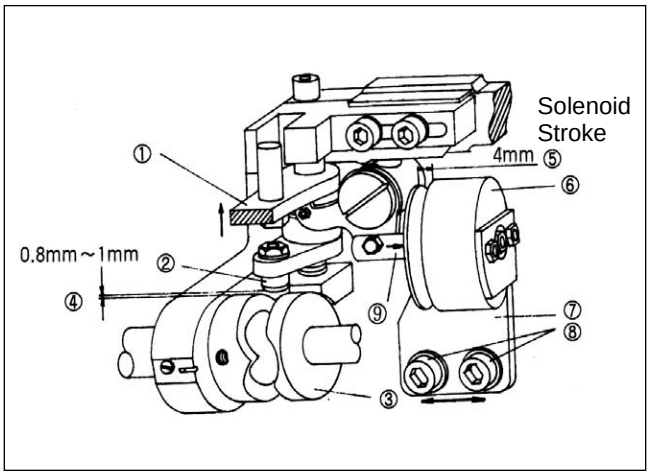
※ The present cam stop position: still inside the complementary straight line of cam leading, right before the roller drops out upon finishing trimming.

[Figure 41]

C. Fixing the position of the trimmer solenoid (ass'y) (See Figure 42.)

a) When the whole trimmer shake linkage ① is in up position, that is, when it has come back to its original position after finishing trimming, the distance ④ between the lower part of the roller ② and the equal point of the trimming cam ③ is about 0.8~1mm. Assuming that this distance ④ never changes, adjust the position of solenoid bracket ⑦ horizontally, where the solenoid housing ⑥ is attached, to make the solenoid stroke ⑤ 4 mm. Then, tightly fasten with fixing screw ⑧.

b) After adjusting the solenoid stroke ⑤, manually operate the solenoid shaft ⑨ towards the arrow direction. See whether it returns to its original position fast and smooth when released. If not, proceed with horizontal adjustment of the bracket ⑦.



[Figure 42]

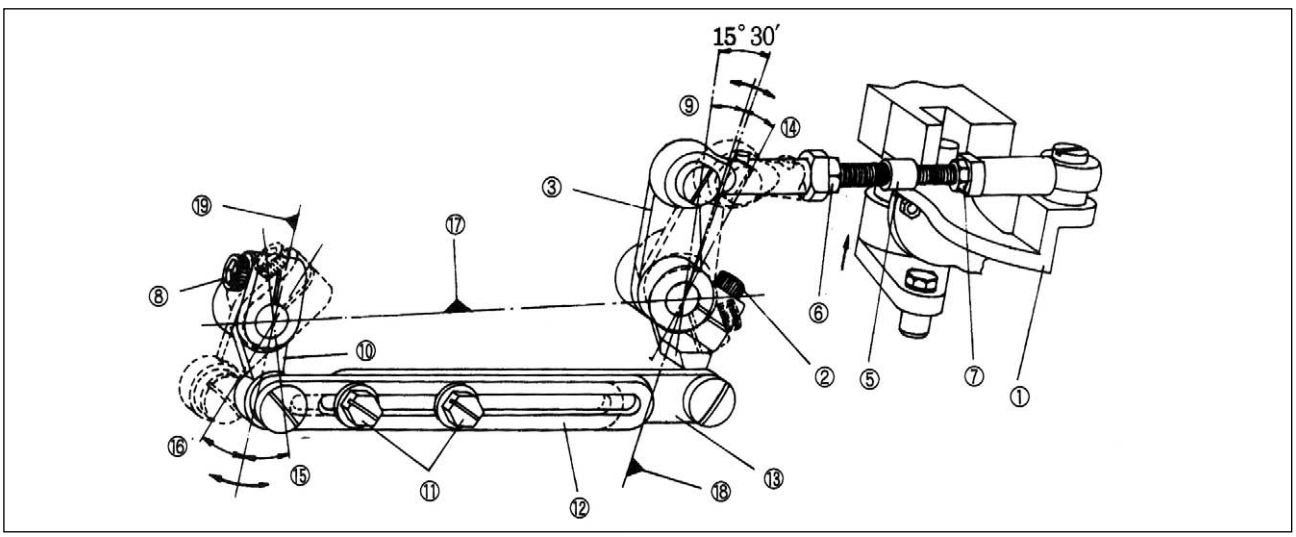
(2) Adjustment of linking device for movable knife shaft and the trimmer driving part (See Figure 43.)

A. When the previously explained adjustment of trimmer driving part is complete, it is in its normal position where the trimmer shake linkage ① has returned to its up position after trimming action.

B. First, loosen the fixing screw ② of the movable knife shaft (right), hold the initial assembling angle of the crank (right) ③ to be about 15°, 30′ to the left from the perpendicular line ⑱ drawn to its center ⑰. To make sure that this position is maintained, adjust the length of the ball joint linking bar ⑤ which comes assembled to trimmer shake linkage ①. Also, adjust the fixing screw ② tightly.
(※ For the adjustment of the ball joint linking bar ⑤, turn the linking bar ⑤ after loosening the nuts (left) ⑥ and (right) ⑦. ⑥ is left nut and ⑦ is the right nut.)

C. Then, loosen fixing screw ⑧ of the movable knife shaft crank (left), and in the same angle as the crank(right)' s lower assembling angle ⑨, place the crank(left) ⑩. Tightly fasten the fixing bolt ⑪ to make sure this position holds.

D. When the linking device is connected as such, the movement angles ⑯⑮⑭⑨ of crank (left) ⑩ and (right) ③ during trimming movement results in an equal angle movements for left and right, against the perpendicular lines ⑱ and ⑲ that are drawn from the center line ⑰ of the two movable knife shafts. Hence, it can be said that the trimming movement is very light.



[Figure 43]

(3) Adjusting movable and fixed knives

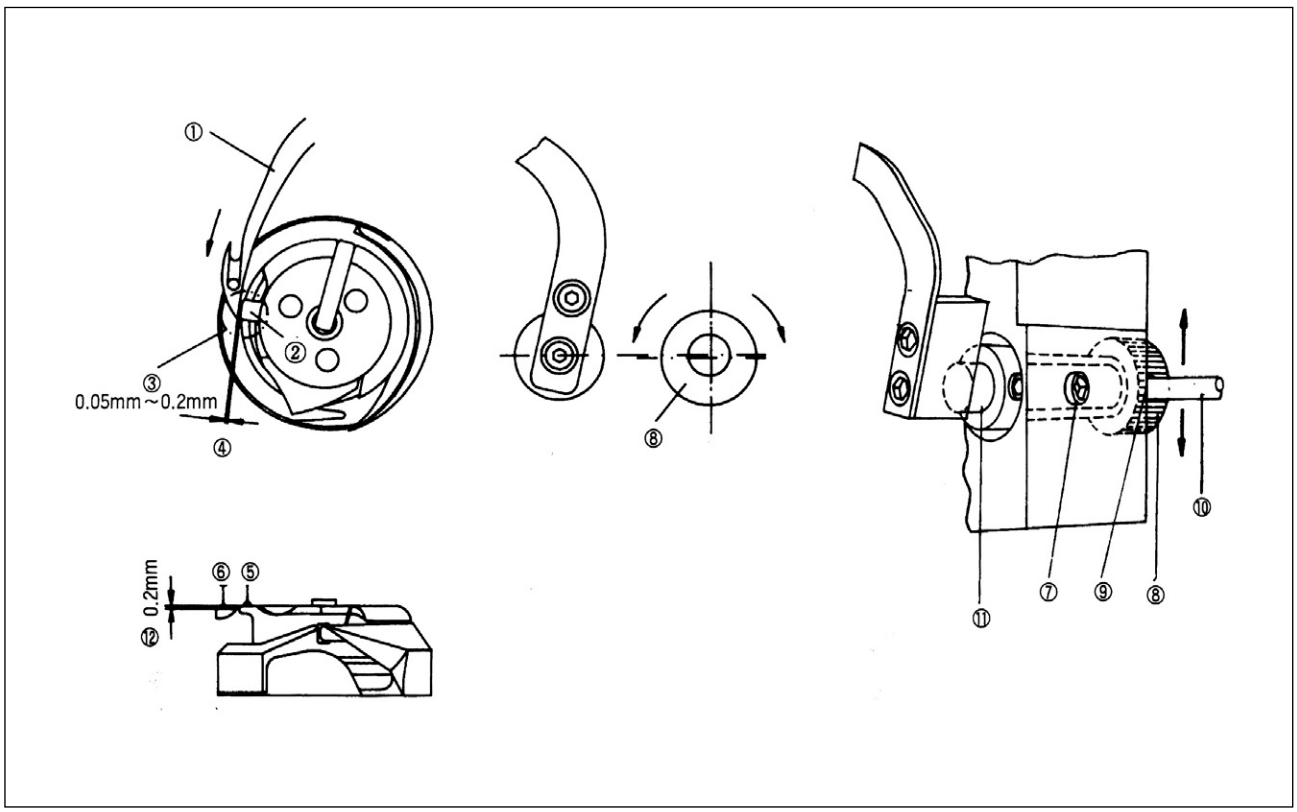
A. Adjusting the position of movable knife-edge and hook stopper (See Figure 44.)

a) When a movable knife ① passes the front side of the hook stopper ②, adjust the distance ④ to be within 0.05~2 mm range like part ③. The upper surface of the movable knife-edge ⑥ should be set up 0.2mm below the upper side of hook stopper ⑤. (※ Given that the fixed knife is pressing down the movable knife.)

b) Clearance ④ adjustment of the movable knife edge and hook stopper front side

- Loosen the needle plate
- Place the hook stopper in the hanging position to the needle plate
- Holding the hook with the hand, manually operate trimming movement so that the movable knife-edge is matches the stopper front side ③.
- Loosen the fixing screw ⑦ of the movable knife shaft eccentric bushing.
- In the lower side hole ⑨ of the eccentric bushing ⑧, stick in a thin driver or adequate pin ⑩ and turn right and left. This will make the position of the movable knife shaft ⑪ change, hence changing the distance ④.
- When the clearance adjustment is finished, tightly fasten the fixing screw ⑦ of the bushing.

c) The adjustment of crossing height ⑫ between the hook stopper upper side ⑤ and movable knife edge upper side ⑥ is possible to certain degree by adjusting the movable knife base washer ⑦ or by changing the position of movable knife shaft collar ⑧, as can be seen in figure 45.



[Figure 44]

B. Adjusting movable and fixed knife (See Figure 45.)

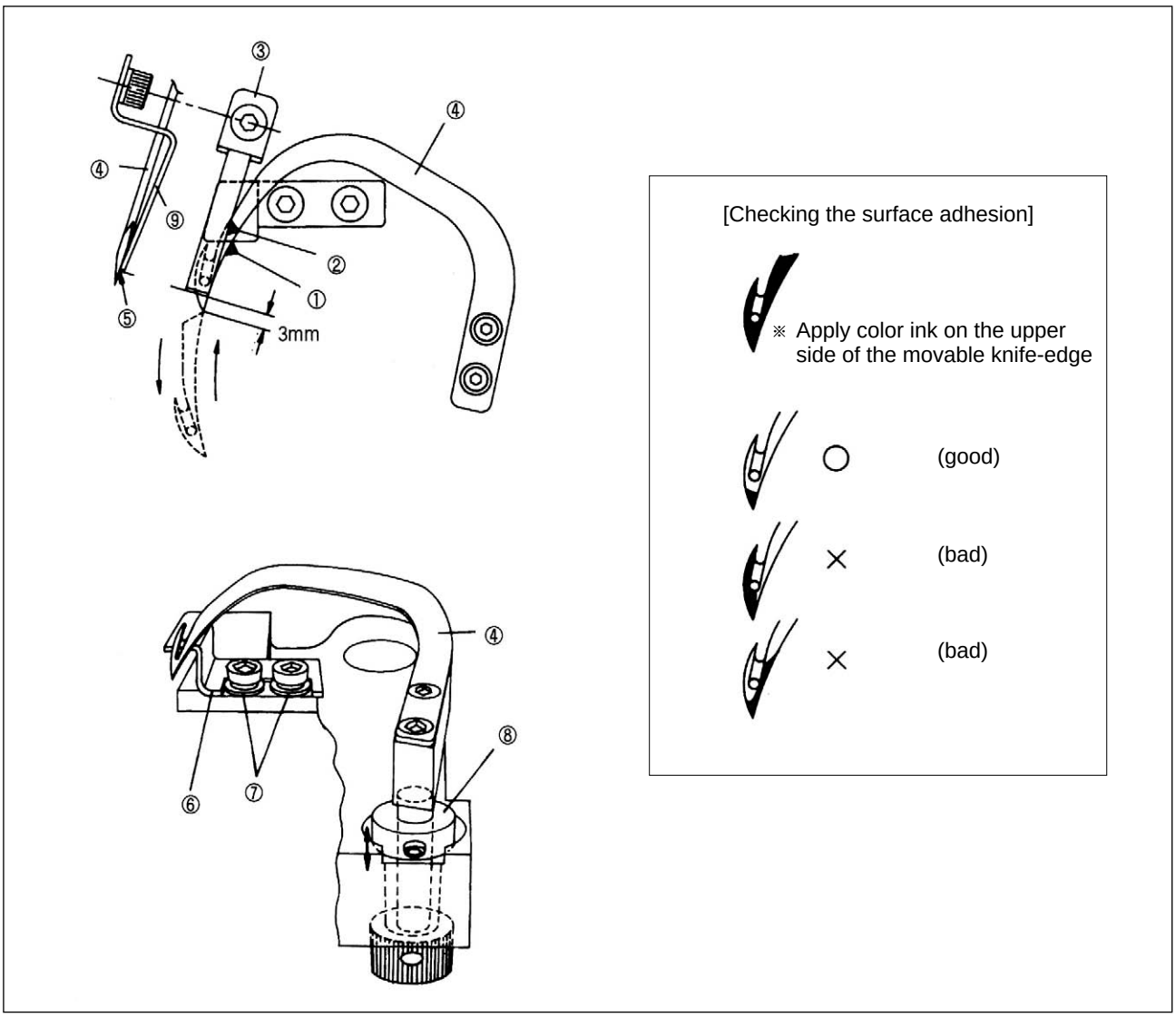
a) Like in Figure 45, adjust the position of the fixed knife ③ so that the fixed knife right side edge ② matches the movable knife inner side edge ①.

b) The initial assembling position of the movable knife ④ is where the movable knife-edge protrudes about 3 mm from the edge of the fixed blade. Please check the "final fixing of the movable knife initial position" on page 29.

c) The surface adhesion conditions ⑤ of fixed blade edge and movable knife upper side have huge impact on its trimming capacity. Please note the various cases of movable/fixed knife surface adhesion conditions on the picture.

[Correcting the adhesive conditions of movable and fixed knives]

- Like in Figure 45, operate manual trimming movement with color ink on the movable knife-edge. By checking the ink trace remaining on the movable knife, the surface adhesion condition of the movable/fixed knives can be tested.
- If the surface adhesion is not very good (same method is used to adjust the tension of movable/fixed knives), please use the following methods: adjusting the amount and position of the washer ⑦ in the lower side of the movable knife base ⑥, horizontally adjusting the assembling position of movable knife shaft collar ⑧, and correcting the shape of fixed blade ⑨ setting position.



[Figure 45]

C. Final fixing of the movable knife's initial position (See Figure 46.)

The standard initial assembling position of the movable knife ① is where the movable knife-edge protrudes about 3mm ③ from the fixed blade edge ② when the trimming action is finished, that is, when the movable knife is in its initial stop position. When fixing the position of the movable knife, the following directions must be followed so that the power generated in the cam ④ is delivered without any loss to the trimming action.

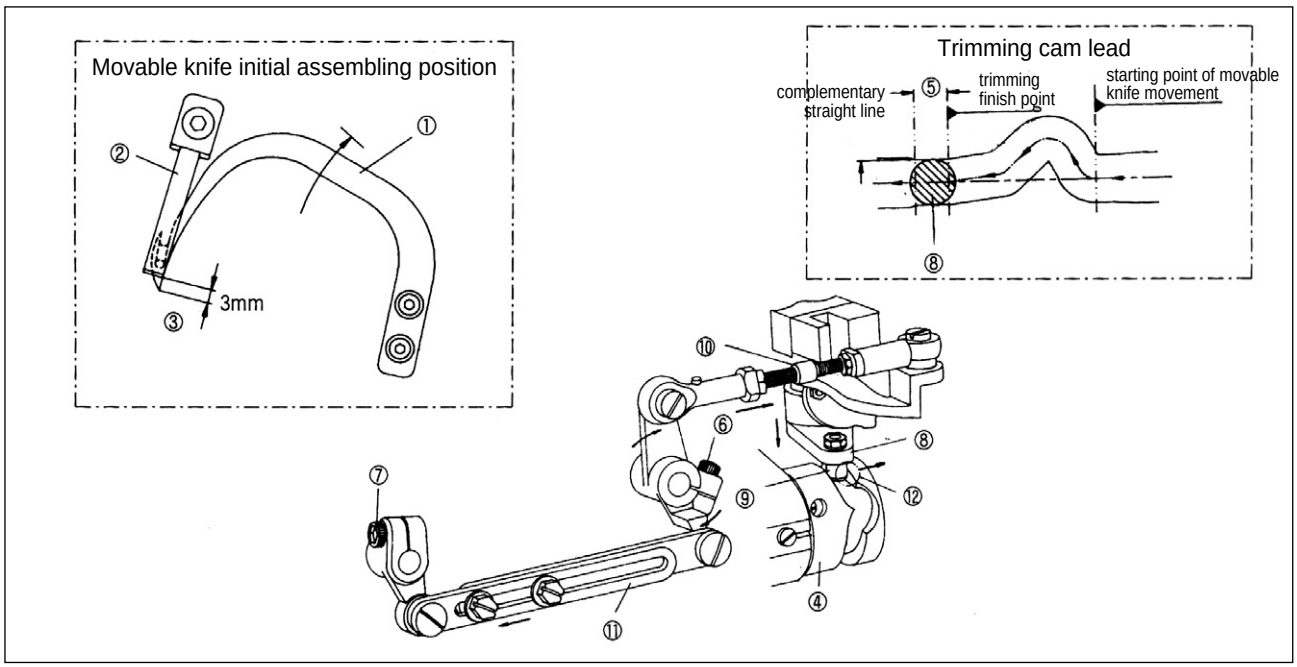
[Adjustment Order]

ⓐ Manually turn the pulley to finish trimming of the trimming cam ④. Place the cam so that the roller can enter the complementary straight line ⑤.

ⓑ Slightly loosen the fixing screws ⑥, ⑦ of movable knife shaft crank of both the left and the right.

ⓒ Press the trimmer shake linkage ⑧ to enter the roller ⑨ inside the cam. Push the linking bar ⑩ to the right or the left crank linking rod ⑪ to the left so that there is no excess room in each linking device. When this is done, the roller ⑨ gets to adhere to the right side of the cam's complementary straight line ⑤, as can be seen in the picture ⑫. While maintaining this position, adjust to make the movable knives on the right and the left protrude about 3mm from the fixed blade-edge ②. Now, tightly fasten the crank fixing screws ⑥⑦ on both sides.

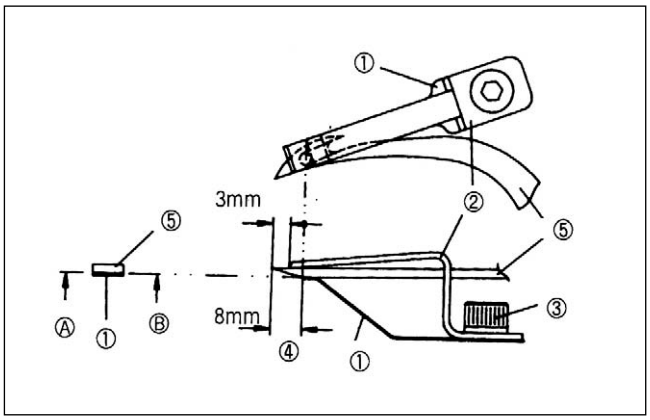
ⓓ If the initial position of the movable knives of both sides are to be adjusted slightly, use the ball joint linking bar ⑩. If only the movable knives are to be adjusted, use the linking rod ⑪.



[Figure 46]

D. Adjusting lower thread holder (See Figure 47.)

The position of lower thread holder ① is set by fixed blade ② and bolt ③. Like in the picture, loosen the bolt ③ and place the lower thread holder ① edge at the lower side of the movable knife ④, about 8mm apart from the movable knife edge ⑤. Make sure to check that the right and left upper sides Ⓐ, Ⓑ of the lower thread holder is tightly adhered to the lower side of the movable knife.

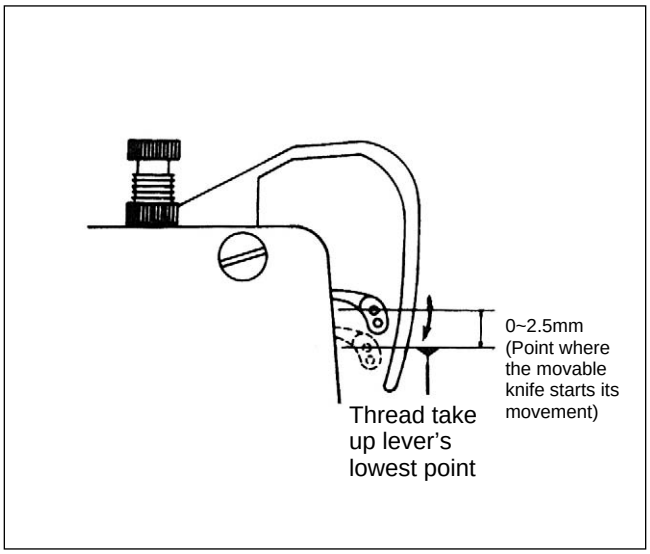


[Figure 47]

(4) Checkpoints on the assembling status of other trimming devices

A. Check the starting point of the movable knife when the trimming action takes place

Operate trimming movement manually to check whether the thread take up lever is in the lowest or at least 2.5 mm raised level when the movable knife starts working, like in Figure 48.

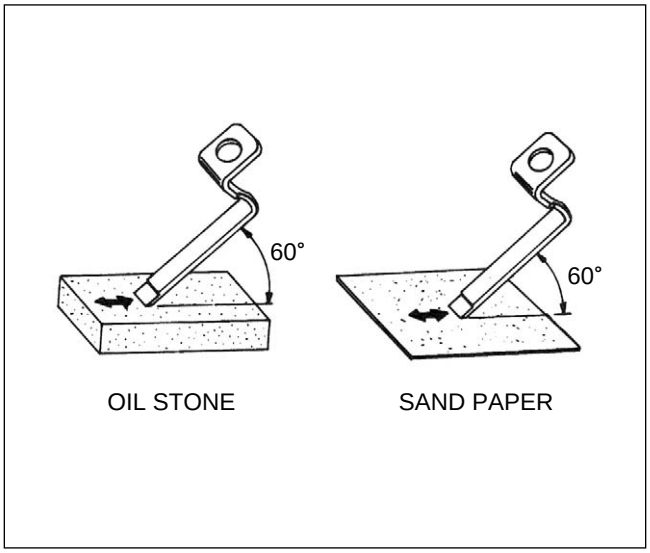


[Figure 48]

B. Maintenance of fixed blade

When the thread does not get trimmed or if the trimmed section of the thread is sloppy, please check the edge condition of the fixed blade.

If the edge of the knife is too dull, sharpen the edge using oil stone or sand paper. (See Figure 49.)



[Figure 49]

17) Replacing movable knife and fixed blade (See Figure 50.)

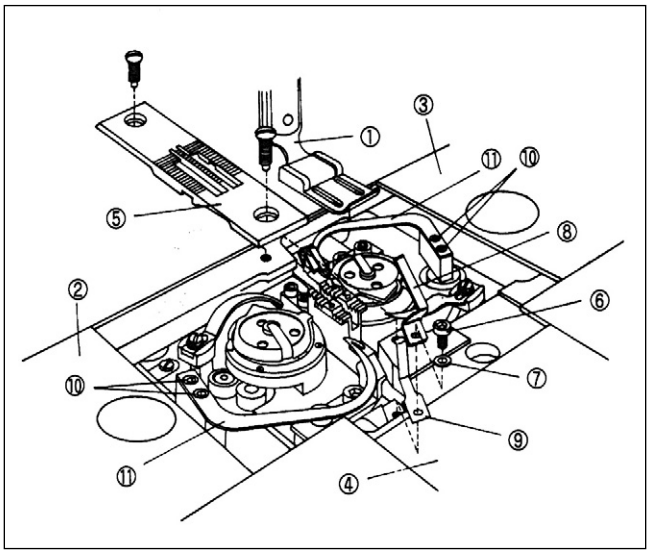
(1) Lift the presser foot ① and open the slide plate lefts ②, right ③ and front ④.

(2) Disassemble the needle plate ⑤.

(3) Loosen the fixing screw ⑥, to disassemble the washer ⑦, fixed blade ⑧ and lower thread holder ⑨.

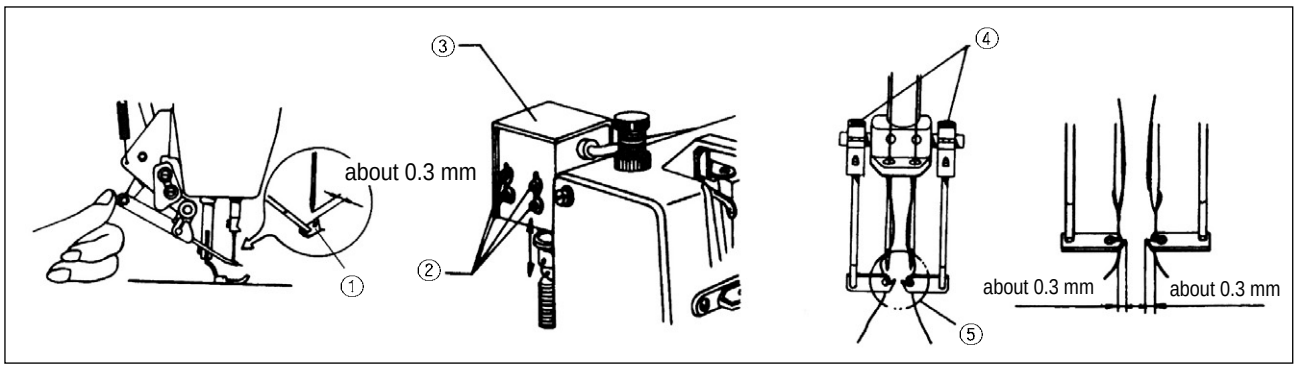
(4) Loosen the fixing screw ⑩ and dissemble the movable knife ⑪.

※ To assemble, follow the reverse order of disassembling.



[Figure 50]

18) Adjusting the wiper



[Figure 51]

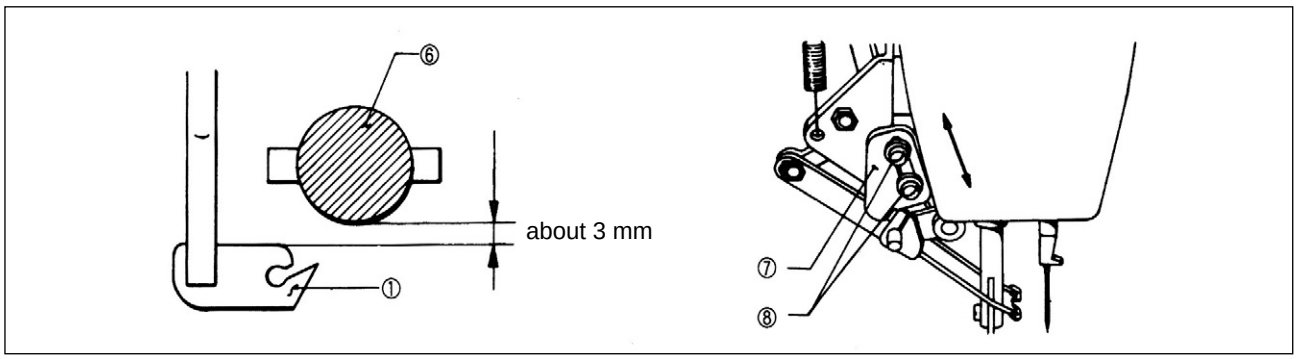
(1) Set the needle at the up-stop position. (at the needle position on the control after trimming)

(2) Set the stitch length at dial "2".

(3) When pressing with hand as in the above picture, the wiper edge ① should protrude about 0.3 mm from the needle edge. Loosen the four clamp screws ② to vertically adjust the solenoid ③.

(4) Hang the thread onto the two needles.

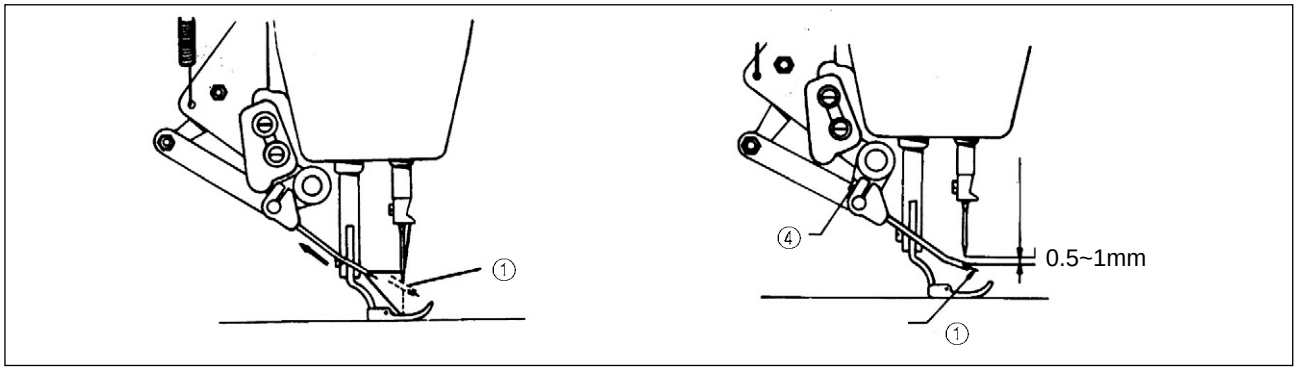
(5) The position of the wiper edge ① should look like the picture ⑤, where the two hooks of the wiper ① can securely hang the thread. To do so, loosen the clamp screws ④ of the wiper and horizontally adjust the wiper ①.



[Figure 52]

(6) When the wiper ① is in waiting position, the distance between the wiper edge ① and the presser bar ⑥ equal point should be about 3 mm. To do so, loosen the clamp screw ⑧ and vertically adjust the stopper ⑦.

※ Depending on the thread type, there are cases where the thread cannot be hung to the wiper edge. Hence, it is necessary to bring the wiper into the range of the needle where the thread from the sewing material can be hung. Make sure that the needle fixing screw does not get in the way of the wiper.



[Figure 53]

(7) The trace of wiper edge ① is as the above picture. Adjust the wiper edge ① by loosening the clamp screw ④ and vertically adjusting the distance between the needle edge and wiper to 0.5~1mm.

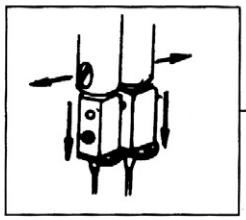
19) Replacing the gauge set for needle width

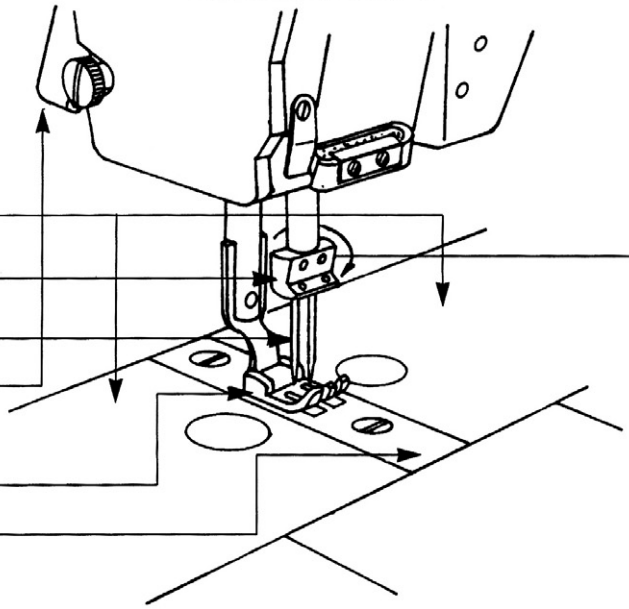
(1) Disassembling order

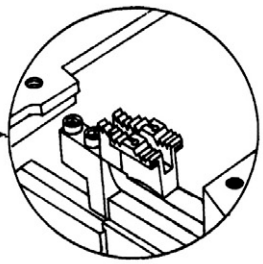
[Caution] Turn off the power switch

1. Remove the right and left slide plates.
2. Remove the two needles
3. Disassemble the needle holder.
   (※ turn it towards the arrowed direction for removal: KM-757 series)
4. Lift the presser bar lifter to raise the presser foot
5. Remove the presser foot
6. Remove the needle plate
7. Disassemble the feed dog
8. Lay down the sewing machine.

3. Disassemble the left and right needle holders (KM-797 series)

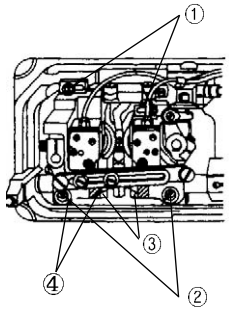






[Adjusting the left/right hook base]

When replacing with a wider or narrower gauge than the needle width in use, the hook edge and needle distance may not fit correctly. In this case, loosen the screws ①,②,③,④ as can be seen in the picture, and replace the feed dog or adjust the distance between the hook edge and the needle. Fasten after making the adjustments.



(2) Assembling order

After assembling in the reverse order of disassembling, adjust the left and right hook base.

4 Causes of Trouble and Troubleshooting

1) Sewing machine troubleshooting

No	Symptom	Checkpoints	Root cause	Corrective action
1	Needle breaks	Direction and height of needle	Needle is inserted into wrong position	Reinsert the needle correctly and push in to its highest level.
		Needle	Needle is bent	Change the needle
		Feed dog timing	Bad timing of feed dog	Adjust the timing of feed dog
		Gap between needle and hook	Bad timing of needle and hook	Adjust the timing of needle and hook
			The heads of the needle and the hook interfere each other.	Adjust the location of the hook
2	Thread breaks	Threading method	Wrong threading (inserted from the opposite side)	Thread the needle correctly
		Needle	Bent needle	Change the needle
		Direction and height of needle	Needle inserted in the wrong direction and height	Insert the needle correctly
		Upper thread tension	Too tight upper thread tension	Reduce the tension of upper thread
		Lower thread tension	Too loose lower thread tension	Reduce the tension of lower thread
		Thread take up stroke	Too large stroke	Adjust the stroke level
		Hook	There is a scratch on the hook edge	Remove the scratch on the hook edge
		Feed dog	There is a scratch on the needle hole of the feed dog	Remove the scratch on the feed dog
		Needle plate	There is a scratch on the thread case and around the needle plate	Remove the scratch on the needle plate.
3	Poor thread adjustment	Thread tension	Upper and lower thread tensions are bad	Adjust the upper and lower thread tensions
		Thread take up spring tension	Thread take up spring tension is inadequate	Adjust the thread take up spring tension
		Gap between opener and hook	The gap between the opener and hook is inadequate	Adjust the gap between the opener and hook
4	Upper thread falls out when starting to sew or sewing is skipped.	Direction and height of needle	Needle is inserted into wrong position	Reinsert the needle correctly and push in to its highest level.
		Needle	Needle is bent	Change the needle
		Threading	Wrong direction	Insert the thread in the right way.
		Hook timing	The timing between the needle and hook is bad	Adjust the timing between the needle and hook
		Gap between the needle and the hook	Needle and hook are too far apart	Adjust the position of the hook
		Remaining upper thread length after trimming	The length of the remaining upper thread is too short	Increase the adjustment volume of the upper thread on the control box
		Lower thread holder	After trimming, lower thread holder does not hold the lower thread	Adjust the location and tension of the lower thread holder.
		Check the up-stop position of the needle	Due to problems in the up-stop position of the needle, the thread take up lever pulls the upper thread out of the needle when the sewing starts	Readjust the needle's up-stop film position
		Check the oil felt tension of upper thread	The upper thread oil felt is pressing the thread too strongly.	Adjust the felt tension

No	Symptom	Checkpoints	Root cause	Corrective action
5	Trimming miss	The gap between the movable knife and the hook	The height and distance between the movable knife and the hook do not match	Readjust the movable knife setting position
		Check the tension of fixed knife	Tension and contact of movable and fixed knives are bad	Correct the tension adjustment and surface contact of movable and fixed knives.
		Direction of the needle	Needle is not inserted correctly	Insert the needle correctly
		Blade side of movable and fixed knives	Scratch and abrasion of movable and fixed knives	Replace movable knife or fixed knife.
		Trimming cam timing	The timing of trimming cam is wrong	Adjust the timing of trimming cam
		Thread release stroke	Thread release stroke is too small	Readjust the thread release stroke
6	Too short thread length after trimming	Trimming timing	Wrong trimming timing	Adjust the trimming timing
		Opening of the thread tension adjusting plate	The opening on the thread tension control plate is too small	Adjust the thread release stroke
		Tension of auxiliary thread tension adjustment assembly	Too strong tension on the auxiliary thread tension control assembly	Adjust the tension of the auxiliary thread tension control assembly
		Thread take up stroke	Thread take up stroke is too large	Adjust the thread take up stroke
		Thread release adjustment volume on the control box	Volume is adjusted to too low	Increase the volume adjustment.

5 Table Drawing